

**COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER PERMITTING DIVISION**

Subject: Guidance Memo No. 17-2001, Municipal Separate Stormwater Sewer System (MS4) Inspection Guidance Standard Operating Procedures (SOP)

To: Regional Directors, Regional MS4 Compliance/Permitting Staff, Regional Compliance Managers

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Summary: This guidance document provides DEQ Central Office and regional stormwater staff with a detailed standard operating procedure for conducting inspections of Municipal Separate Storm Sewer System (MS4) permittees.

Electronic Copy: An electronic copy of this guidance document is available in PDF format through DEQ's MS4 website.

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Disclaimer:

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any particular action not otherwise required or prohibited by law or regulation. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.

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PART I BACKGROUND AND INTRODUCTION

1. What is an MS4?

According to 9 VAC 25-870-10, **municipal separate storm sewer system (MS4)** means a “conveyance or system of conveyances otherwise known as a municipal separate storm sewer system, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, (i) owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization or a designated and approved management agency under section 208 of the CWA, that discharges to surface waters of the state; (ii) designed or used for collecting or conveying stormwater; (iii) that is not a combined sewer; and (iv) that is not part of a publicly owned treatment works (POTW)”.

What constitutes a particular MS4 is often misinterpreted and/or misunderstood. An MS4 is not just a system of underground pipes—it can include roads with drainage systems, gutters, and ditches. MS4 systems can be linear or more complex, open, piped, manmade, natural, or a combination of all of these things. Some carry groundwater or piped streams, are tidally influenced, or have some other constant source of non-stormwater discharge. Although most entities with MS4s are local municipal governments (e.g., cities, counties, and towns), there are other governmental entities that manage storm drain systems at their facility, including the Virginia Department of Transportation, colleges and universities, hospitals, military installations, and prisons. The term “MS4” can refer to the system itself or the MS4 permittee which owns and operates the system.

Unlike VPDES wastewater permits which typically contain specific end-of-pipe effluent limits based on water quality standards or available treatment technology, MS4 permits usually include programmatic requirements involving the implementation of **best management practices (BMPs)** in order to reduce pollutants discharged to the “maximum extent practicable” (MEP). In addition, permittees are allowed flexibility in the types of BMPs and activities implemented to meet permit requirements. This flexibility, as well as the multifaceted nature of the requirements, can make inspection of MS4 stormwater programs a complex process.

2. Purpose of the Guidance

The purpose of this Guidance is to provide DEQ regional stormwater staff with a detailed standard operating procedure (SOP) for conducting inspections of Phase I and Phase II MS4 programs. The Guidance was adapted from the U.S. Environmental Protection Agency’s (EPA’s) *MS4 Program Evaluation Guidance* (January 2007, EPA-833-R-07-003), and modified specifically for Virginia’s MS4 permit requirements. The Guidance is intended to be used as a reference to prepare for and conduct an MS4 inspection. The inspector must ultimately rely on experience and best professional judgment (BPJ) to conduct a comprehensive MS4 program inspection, and each inspection should be customized to the issues and requirements specific to that MS4.

The primary goal of an MS4 inspection is to **assess the compliance** of an MS4 with its VPDES permit and the MS4 Program Plan developed to meet the conditions of that permit. **An MS4 program inspection is ultimately based on the requirements in the MS4 permit and commitments made in the MS4 Program Plan. These should serve as the primary references for a specific MS4 program inspection.** The inspector may also recommend additional activities that could be conducted by the

permittee to improve the overall MS4 program. For purposes of this guidance, the term “inspection” is generally used to define any assessment of an MS4 stormwater program. Inspections are further defined as either “audits”, “inspections” or “desk-top audits”, depending on the level of review performed. These and other common terms used throughout this Guidance are defined below:

(NOTE: The guidance provided below regarding typical activities performed by an MS4, documents to request during an inspection, potential audit/inspection questions, and common problems/issues under each programmatic area are provided as examples. They do not apply universally to all MS4s. The inspector should tailor the inspection based on the specific requirements of the permit (Phase I or Phase II, individual or general) and associated MS4 Program Plan.)

3. Common Terms

Common terms used throughout this Guidance are defined as follows:

- Inspection—any evaluation conducted by an inspector that does not reach the level of a full comprehensive evaluation (audit); that is usually a focused evaluation of at least 2-3 specific MS4 program components to verify compliance with permit requirements (in limited circumstances, a focused inspection of only one program area may be conducted that involves significant review of that specific program area). For purposes of this guidance, the term “inspection” will be used to denote any type of MS4 evaluation, including an actual MS4 audit, or “desk-top” Audit
- Audit—a comprehensive evaluation of **ALL** components of an MS4 program to assess overall implementation and identify compliance problems
- Desk-top Audit—is a comprehensive review of a permittee’s MS4 Program Plan as currently implemented and the most recent Annual Report. Thorough review of these documents is usually sufficient for an inspector to note instances where the permittee is not compliant with permit requirements. The inspector may request additional information from the permittee when a determination of compliance is not possible using only those two documents. The inspector must set up a conference call and/or face to face meeting with MS4 representatives to discuss the audit findings or to gain a better understanding of the MS4 Program Plan implementation. The inspector produces a report of audit findings that may contain recommendations to improve the program and/or corrective actions the permittee must take to achieve compliance.
- MS4 Program Plan—the document(s), also referred to as the Stormwater Management Program Plan, or SWMP Plan, that is developed and implemented by the MS4 to comply with permit requirements
- MS4 Program—the stormwater management program, or SWMP, implemented by the permittee
- MS4—the municipal separate storm sewer system (full text from 9 VAC 25-870-10 is defined above); can refer to the conveyance system itself in addition to the MS4 permittee that owns/operates the system.
- Permittee—the permitted owner/operator(s) of the MS4; the entity being evaluated
- Inspector—the VPDES permitting authority staff person who is conducting the evaluation of the MS4 program
- Municipal permittee—a general reference to a municipality (city, county, town) that is the owner and/or operator of an MS4 and is covered by an VPDES MS4 permit
- “Stormwater management facility” or “SMF”—is a control measure that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, and the period of release or the velocity of the flow. SMFs are frequently referred to as “structural BMP”s or simply “BMP”s.

- “Total maximum daily load” or “TMDL”-is the sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, natural background loading and a margin of safety. TMDLs are usually expressed in mass per time.
- “Total maximum daily load Action Plan” or “TMDL Action Plan”-is a plan that contains the scheduled steps of activities that the MS4 operator will take to address the assumptions and requirements of the TMDL wasteload allocation. TMDL Action Plans may be implemented in multiple phases over more than one state permit cycle.
- “Virginia Erosion and Sediment Control Program” or “VESCOP”-a program that has been established by a VESCOP authority, and approved by DEQ, to control soil erosion, sediment deposition, and nonagricultural runoff associated with a land-disturbing activity to prevent unreasonable degradation of properties, stream channels, waters, and other natural resources. A VESCOP will include such items as local ordinances, permit requirements, annual standards and specifications, policies and guidelines, technical materials, and requirements for plan review, inspection, enforcement, and evaluation consistent with the requirements of the Erosion and Sediment Control Law and associated regulations.
- “Virginia Erosion and Sediment Control Program authority” or “VESCOP authority”-an authority approved by DEQ to operate a Virginia Erosion and Sediment Control Program. An authority may include a locality; state entity (including the Department); federal entity; or, for linear projects subject to annual standards and specifications, electric, natural gas, and telephone utility companies, interstate and intrastate natural gas pipeline companies, railroad companies, or authorities created pursuant to § 15.2-5102.
- "Virginia Stormwater Management Program" or "VSMP"- a program that has been established by a VSMP authority, and approved by DEQ, to manage the quality and quantity of runoff resulting from land-disturbing activities. A VSMP will include such items as local ordinances, rules, permit requirements, annual standards and specifications, policies and guidelines, technical materials, and requirements for plan review, inspection, enforcement, and evaluation consistent with the requirements of the State Water Control Law and associated regulations.
- "Virginia Stormwater Management Program authority" or "VSMP authority"-an authority approved by DEQ to operate a Virginia Stormwater Management Program or, until such approval is given, the Department. An authority may include a locality; state entity (including the Department); federal entity; or, for linear projects subject to annual standards and specifications in accordance with subsection B of § 62.1-44.15:31, electric, natural gas, and telephone utility companies, interstate and intrastate natural gas pipeline companies, railroad companies, or authorities created pursuant to § 15.2-5102.

4. Regulatory Overview

In 1987, Congress amended the Clean Water Act (CWA) to require implementation, in two phases, of a comprehensive national program for addressing stormwater discharges, including those discharges from MS4s. The first phase of the program, commonly referred to as “Phase I,” was promulgated on November 16, 1990 (*55 Federal Regulations (FR) 47990*), and required NPDES permits for large and medium MS4s serving populations of 100,000 or more, based on the 1990 decennial census. The second phase, known as “Phase II”, of the stormwater program was promulgated on December 8, 1999, and requires NPDES permits for stormwater discharges from certain small MS4s. The Phase II Final Rule required that operators of small MS4s in Bureau of the Census-defined “urbanized areas” obtain a permit to discharge stormwater from their outfalls.

Virginia is **authorized** by EPA to **administer** the NPDES permit program throughout the State under the Virginia Pollutant Discharge Elimination System (VPDES) permit regulations. Effective July 1, 2013, the authority to issue and administer VPDES stormwater permits (both MS4 and construction stormwater

permits) transferred from the Department of Conservation and Recreation (DCR) to the Department of Environmental Quality (DEQ).

5. Types of Permittees

Traditional (Municipal) MS4 Programs- Many MS4 operators permitted under the VPDES program are city, county, or town government entities, and often referred to as “municipal MS4s”. To evaluate a municipal MS4 program, an inspector should have a basic understanding of the structure, operation and function of local governments. Cities, counties, and towns provide a variety of functions including fire and police protection, construction and maintenance of streets, stormwater and wastewater services, and providing for health, recreation, and social needs. Stormwater management responsibilities vary depending on the municipality. MS4 programs can be administered by various departments or programs, including: public works, public utilities, buildings and grounds, planning, engineering, environmental services, etc. Permittees should clearly describe in the MS4 Program Plan the roles and responsibilities of each department involved in stormwater management.

Nontraditional MS4 Programs- As stated previously, the term MS4 does not solely refer to municipally owned storm sewer systems. Examples include, but are not limited to non-traditional entities such as the Virginia Department of Transportation (VDOT), universities, community colleges, hospitals, military installations, prisons, State agencies, or quasi-public toll road authorities. Because of the unique structure and features of many non-traditional MS4s, some of the traditional MS4 Program Plan elements may need to be modified or may not be entirely applicable. For example, a public education program for a military base would be very different from a public education program for a traditional city.

6. MS4 Permits in Virginia

Phase I Permittees (Large and Medium MS4s)

The following eleven permittees were identified in the 1990 Phase I regulations and are commonly referred to as Phase I MS4s:

Arlington County
City of Chesapeake
Chesterfield County
Fairfax County
City of Hampton
Henrico County
City of Newport News
City of Norfolk
City of Portsmouth
Prince William County
City of Virginia Beach

Each Phase I MS4 is regulated by an **individual** permit with a 5 year term like other VPDES permits. Under these permits, the MS4 owner/operator must implement a collective series of program elements to reduce the discharge of pollutants from the given storm sewer system to the **maximum extent practicable (MEP)** in a manner that protects water quality.

In general, both Phase I and Phase II MS4s are required to implement the same six basic programmatic elements (ie. Minimum Control Measures). Phase I MS4s, however, must also have an additional program component of minimizing impacts of discharges from industrial and commercial facilities. The specific programs applicable to Phase I MS4s must include elements to:

- Operate and maintain structural stormwater controls
- Control discharges from areas of development and significant redevelopment
- Operate and maintain public streets, roads and highways
- Identify, monitor and control discharges from municipal waste treatment, storage or disposal facilities
- Control pollutants related to application of pesticides, herbicides and fertilizers
- Implement an inspection program to enforce ordinances, which prohibit illicit connections and illegal dumping into the MS4
- Screen the MS4 for illicit connections and illegal dumping
- Implement standard investigative procedures to identify and terminate sources of illicit connections or discharges
- Prevent, contain and respond to spills that may discharge into the MS4
- Limit the infiltration of sanitary seepage into the MS4
- Identify, monitor and control discharges from municipal landfills; hazardous waste treatment, storage, disposal and recovery facilities; facilities subject to EPCRA Title III, Section 313; and any other industrial or commercial discharge the permittee determines to be contributing a substantial pollutant loading to the MS4
- Control pollutants in construction site runoff
- Conduct public education on stormwater

Phase II Permittees (Small MS4s)

MS4s located within the boundaries of Census defined urbanized areas (UAs) based on the latest decennial census are automatically designated as regulated, and may require permit coverage.

Urbanized Areas are land areas comprising one or more central places and the associated fringe areas that together have a residential population of at least 50,000 people and an overall population density of at least 1,000 people per square mile. In Virginia, the following UAs exist based on the 2010 US Census:

Blacksburg

Bristol

Charlottesville

Staunton/Waynesboro

Fredericksburg

Harrisonburg

Kingsport (TN)

Lynchburg

Richmond

Roanoke

Virginia Beach

Washington, DC

Winchester

As in the Phase I programs (see above), small MS4 programs must be designed and implemented to control the discharge of pollutants from storm sewer systems to the MEP in a manner that protects water quality. Small MS4s include storm sewer systems operated by cities, counties, towns, federal facilities such as military bases, Veteran's Affairs hospitals and research facilities, Department of Defense facilities and parkways, and state facilities such as VDOT, community colleges and public universities.

Under the general permit, small MS4s must develop, implement and enforce a program that includes the following six "minimum control measures" (MCMs):

- Public education and outreach on stormwater impacts

- Public involvement and participation
- Illicit discharge detection and elimination
- Construction site stormwater runoff control
- Post-construction stormwater management in new development and redevelopment
- Pollution prevention/good housekeeping for municipal operations

7. How to Use this Guidance

The first part of this Guidance includes background information useful for review. Subsequent sections guide the inspector through a series of steps to conduct an inspection, which can be categorized into four parts: **Pre-inspection Preparation, Conducting the Inspection, Evaluating Specific MS4 Program Areas, and Post-Inspection Activities.**

The section titled “Evaluating Specific MS4 Program Areas” is divided into subsections that describe in depth how to evaluate overall program management as well as each of the major MS4 Program Plan components. The EPA *MS4 Program Evaluation Guidance* (January 2007, EPA-833-R-07-003) recommends condensing required program elements, described above, for both Phase I and Phase II permits into 7 major MS4 program areas to evaluate. This Guidance will accordingly use the same seven MS4 program areas as described in the EPA guidance document, which are as follows:

- Overall MS4 Program management
- MS4 public education and participation (MCM 1 and 2 for Phase IIs)
- Illicit discharge detection and elimination (MCM 3 for Phase IIs)
- Construction activities (MCM 4 for Phase IIs)
- Post-construction stormwater management (MCM 5 for Phase IIs)
- MS4 maintenance/pollution prevention activities (MCM 6 for Phase IIs)
- Industrial/commercial facilities (Applicable primarily to Phase I MS4s)

A subchapter will be devoted to each program area listed above that describes/contains:

- Typical activities performed by the MS4/Program elements to address during the inspection
- Examples of documentation/records to review for the inspection
- Onsite and In-field Procedures for MS4 Inspections
- Potential Inspection/audit questions
- Common problems/issues identified during inspections

PART II - PRE-INSPECTION PREPARATION

1. Inspection Goals and Benefits

Effective July 1, 2013, DEQ became the agency responsible for administering and implementing the MS4 permit program in Virginia. The primary goal of DEQ in evaluating an MS4 Program is to **determine the compliance status of a permittee with the MS4 permit and the MS4 Program Plan.** In addition to this determination, there are a number of other benefits from conducting an MS4 Program inspection, including:

- Return to compliance with appropriate enforcement actions as necessary
- Stronger coordination and working relationship between DEQ and the permittee
- Better understanding by the permittee of permit requirements and DEQ’s expectations
- Improved DEQ knowledge of the permittee’s operations, priorities, constraints and challenges faced when implementing the MS4 Program
- A more effective MS4 Program Plan, resulting in better water quality

2. Deciding Which MS4s to Evaluate

DEQ will establish the minimum frequency for MS4 inspections based on EPA's July 21, 2014 memorandum titled "Clean Water Act National Pollutant Discharge Elimination System Compliance Monitoring Strategy". The Compliance Monitoring Strategy (CMS) recommends, at a minimum, that all permitted MS4s are assessed for compliance at least once every five years. DEQ will adopt the inspection frequency recommended in the CMS, and establish as its compliance monitoring goal that all MS4s are inspected at least once during the five year permit cycle. Moving forward, **the compliance monitoring goal of DEQ for Phase I MS4s will be to conduct, at a minimum, at least one audit within 5 years of issuance of the Phase I individual permit. For Phase II MS4s, DEQ's goal will be, at a minimum, to evaluate compliance (by either audit/inspection, and/or "desk-top" audit) of all permittees at least once during the 5 year term of the MS4 General Permit.**

With the minimum compliance monitoring goals established, DEQ will utilize a risk based protocol to identify and prioritize which MS4s to evaluate in a given year. The risk based inspection strategy will also help identify those MS4s that should be evaluated more frequently than once per 5 year permit cycle. Since staff resources are limited and only a limited number of inspections can be conducted in a given year, DEQ will develop an inspection strategy on an annual basis, giving priority to those MS4s with known or suspected compliance issues. MS4s with significant issues of non-compliance will be given highest priority when developing the inspection strategy and schedule for inspection. Examples of non-compliance DEQ will consider when developing the inspection strategy include the following:

- Failure to submit an Annual Report
- Failure to accomplish major milestones of the MS4 permit
- Un-authorized discharge(s) resulting from negligent or willful action by the permittee
- Failure to meet significant permit requirements

3. Materials to Review before the Inspection

Here are the principle documents that DEQ stormwater inspectors should review prior to evaluating a particular MS4:

- The applicable **MS4 VPDES permit** (either the individual permit or the MS4 General Permit),
- The **MS4 Program Plan**, and
- The **most recent Annual Report**.

Because the inspection is ultimately an assessment of the permittee's compliance with its VPDES permit, the inspector must carefully review the permit and its requirements before inspecting the MS4. The inspector should also thoroughly review the MS4 Program Plan prior to the inspection. As described previously, the MS4 Program Plan consists of a single document or collection of documents containing the BMPs the permittee has developed to meet conditions of the permit. In addition to BMPs, the MS4 Program Plan may contain, or incorporate by reference, other documents such as local ordinances, Nutrient Management Plans, Total Maximum Daily Load (TMDL) Action Plans, maps of outfalls and stormwater infrastructure, Stormwater Pollution Prevention Plans (SWPPPs) for municipal facilities, and various written procedures and policies.

DEQ allows MS4 permittees a great deal of flexibility in developing BMPs to meet permit conditions, using an adaptive, iterative approach. The inspector should therefore consider the MS4 Program Plan as a "living document", and recognize permittees may replace ineffective BMPs and add additional BMPs to

the MS4 Program Plan. Some changes in the MS4 program, however, do require approval in accordance with the terms of the permit. The inspector must also review the most recent Annual Report in order to clarify what is being implemented. The most recent Annual Report would be the document where permittees describe any changes to existing BMPs or established procedures.

In addition to the documents described above, inspectors should review any other sources of information related to the MS4 prior to conducting the inspection. Examples of additional information related to a permitted MS4 are provided below:

- Department comments on the most recent Annual Report and/or requests for additional information, as well as permittee responses to those comments or additional info requested.
- Department reviews of MS4 localities' VESCP and/or VSMP programs
- Prior MS4 Inspection Reports-older inspection reports, if available, are a good source of information.
- Older Annual Reports- Previous annual reports could also be reviewed if time permits and if the inspector wants to assess trends before the on-site inspection.
- Correspondence between DEQ and the permittee- The inspector should review any relevant correspondence with the permittee regarding its MS4 program. This material might include correspondence/comments on the permittee's MS4 Program Plan, reviews and/or comments on previous Annual Reports, notices of violation (NOVs), or other notices.
- Permittee Web Sites- Often, permittees have developed stormwater websites that can provide copies of reports, guidance documents, and other more current information on the stormwater program.
- Pollution Response (PReP) Reports-DEQ has a well developed pollution response program that is implemented regionally, where incidents called in by citizens are investigated. Citizen complaints frequently result from inadequate pollution prevention practices in MS4 localities.
- Legal Authority- Inspectors may review the permittee's legal authority, especially with respect to any exemptions or exclusions from the applicable ordinance. If the MS4 is a city, county, or town, then their ordinances can be viewed on the Municode Library website for Virginia, at <http://www.municode.com/Library/VA>.
- Special Water Quality Concerns-The inspector should be aware of any TMDLs developed for waterbodies located within the MS4 jurisdiction, as well as impaired water to which the MS4 may discharge.
- Memorandums of Understanding (MOUs)-Any written agreements between or among co-permittees or other entities stipulating arrangements and responsibilities for meeting permit requirements.

4. Notification

In very limited situations, an inspector may give short term notification of several days or even conduct an unannounced inspection. Examples of when an inspector may decide not to give notification well in advance include the following:

- When potentially significant non-compliance is suspected,
- For smaller MS4s or non-traditional MS4s when a focused inspection of only 2 or 3 program components will be evaluated.

For the majority of cases, however, unannounced audits and/or inspections of MS4s are impractical due to the extensive logistical planning that is necessary, and MS4 permittees should therefore be notified at least **2 weeks in advance** of the planned inspection. Notification should be given to the **primary contact** for the MS4. In most cases, the primary contact is the MS4 coordinator, and the person who develops the Annual Reports. The inspector should explain the basic format and goals of the inspection at this time,

and provide the MS4 with a proposed inspection onsite schedule to allow adequate time for preparation, as well as a list of documents to assemble for the inspector to review during the onsite visit. At the time of notification, the inspector and MS4 coordinator should discuss the appropriate people to include in the inspection. If the inspector will perform a document review before the inspection occurs, the inspector should provide a list of pre-inspection documents to the MS4 during the initial contact. As a general rule of practice, the inspector should request that the MS4 provide the requested documents no later than 48 hours before the first day of the inspection. Additional time may be provided if requested by the MS4.

Examples of pertinent staff to include are:

- Program Managers (e.g. Public Works, Utilities, Engineering, Planning, Parks, etc.)
- Erosion and Sediment Control (E&S)/Stormwater Inspectors
- Supervisory staff from public works yards, vehicle maintenance facilities, field crews
- Stormwater Outreach/Public Relations specialists
- Legal Staff
- Third party contractors/consultants who assist with MS4 program implementation (e.g., Annual Report preparation, dry weather outfall screening, construction inspections, etc.)

For larger and more complex MS4s, a pre-inspection conference call (with DEQ and key MS4 personnel) may be appropriate to discuss the inspection agenda and logistics, records/documentation to assemble for the inspection, determine appropriate participants, and answer any questions. A final call to the MS4 coordinator is helpful 1 to 3 days before the inspection to answer any last-minute questions, exchange contact information (e.g. cell phone numbers), confirm the schedule and meeting locations, and make any necessary changes.

5. Logistics/Amount of Time Needed to Conduct Inspections

An MS4 inspection is a detailed onsite evaluation, and requires a considerable amount of time to obtain a comprehensive picture of MS4 Program Plan development, coordination, and implementation. Inspectors will need to spend considerable time both in the office and the field. The amount of time typically allotted for an inspection can vary greatly, and depends upon the size of the MS4, the complexity of the MS4 Program, and the level of detail devoted to each program area. An audit of a Phase I MS4 or large Phase II MS4 may require 2 to 3 days to complete for a single inspector, while inspections of very small and/or some non-traditional MS4s may only take from 2 to 4 hours to complete. As a general rule of thumb, the inspector should allot a full day to complete an inspection of a “typical” Phase II permittee. More than one inspector can be used for MS4 inspections as well, allowing one person to interview office staff and another to perform field activities, or establishing several “teams” that look at different program areas simultaneously.

A single program component of large, complex MS4s may take several hours to evaluate during an inspection/audit (e.g. 1 hour in office, and up to 2 hours in the field). It is advisable where possible to combine two or more program areas at the same time. For example, the inspector may look at both construction and post construction field components during the same two hours in the field, or may evaluate the Illicit Discharge Detection and Elimination (IDDE) and MS4 maintenance/pollution prevention activities in one field outing. Below are examples of MS4 audit schedules for typical Phase I and Phase II permittees.

Phase I Permittee/Day 1	
8:00-9:00	Inspection “Kick-Off”-Opening Discussion and Overall Program Management
9:00-9:30	Public Education & Outreach/Public Participation (Office)

9:30-10:00	Industrial & Commercial Facilities (Office)
10:00-11:30	Industrial & Commercial Facilities (Field)
11:30-12:15	Break for Lunch
12:15-2:00	IDDE Program with mapping demonstration, Pollution Prevention/Good Housekeeping for Municipal Operations (Office)
2:00-4:00	IDDE and Municipal Facilities (Field)
Phase I Permittee/Day 2	
8:30-10:30	Construction and Post-construction Stormwater Management (Office)
10:30-12:00	Construction and Post-construction Stormwater Management (Field)
12:00-1:00	Break for Lunch
1:00-3:00	Continue with Construction and Post-construction Stormwater Management (Field)
3:00-4:00	Closing Discussion (Office)

Phase II Permittee/Day 1	
8:00-8:30	Inspection “Kick-Off”-Opening Discussion and Overall Program Management
8:30-9:00	Public Education & Outreach/Public Participation (Office)
9:00-10:30	IDDE Program with mapping demonstration, Pollution Prevention/Good Housekeeping for Municipal Operations (Office)
10:30-12:00	IDDE and Municipal Facilities (Field)
12:00-12:45	Break for lunch
12:45-2:00	Construction and Post-construction Stormwater Management (Office)
2:00-4:00	Construction and Post-construction Stormwater Management (Field)
4:00-4:30	Closing Discussion (Office)

The examples above are provided to give inspectors a framework agenda on which an inspection may be based. It should be noted that inspection schedules can be very fluid, and frequently require adjustments prior to and even during the actual inspection to reflect changing conditions and circumstances with municipal staff scheduling, site conditions, weather, etc. DEQ inspectors need to be flexible with inspection agendas, and prepared to make adjustments during the inspection process.

PART III - CONDUCTING THE INSPECTION

1. Beginning the Inspection-“Kick-off” Meeting

An MS4 inspection should begin with an opening “kickoff” meeting to allow for introductions and an overview of the process and goals of the inspection/audit. This meeting usually includes all staff who will be interviewed, and it is a good time for higher-level managers and officials to be introduced to the process and understand what will be happening during the course of the inspection. The kickoff meeting is important because it gives the inspector the opportunity to learn the roles of individuals involved in the MS4 program, and identify the staff to meet with in the field.

At least 30 to 60 minutes should be allotted for the meeting, and the inspector may tailor the agenda to suit his or her own objectives. The following is a sample agenda for the kickoff meeting:

- **Introductions-** The inspector should introduce him/herself as a DEQ inspector and present proper DEQ credentials (i.e., DEQ Identification Card). These credentials represent that the holder is a lawful representative of DEQ and is authorized to perform VPDES inspections. Each person in the room can introduce him/herself in turn, and it is helpful to exchange business cards and distribute a sign-in sheet at this time to collect the names, positions, and contact information for the people being interviewed during the inspection.
- **Goals and benefits-** Discuss the primary objective of the inspection to assess compliance with the MS4 permit and MS4 Program Plan, and outline some of the benefits of the inspection process.
- **Schedule-** Review the inspection schedule for both office and field activities, and discuss which topics will be addressed during the inspection process. It is also helpful to clarify what type or level of staff should participate in each part of the inspection and what documentation should be available for review. The inspector should limit staff participation if they are not needed.
- **Products and timeline-** The inspector should describe the general content and organization of the audit/inspection report and provide a timeline for when a final report will be produced.
- **Questions-** Limit questions to the inspection process, procedures, and report. Encourage MS4 political or management staff to ask questions. Questions about a specific program component can be addressed during that part of the inspection.

2. Effective Interview Techniques for MS4 Inspections

An inspector's approach and demeanor can have a significant impact on the success of the interviews by putting the interviewees at ease. Inspections can be a stressful process for the permittee, which could result in stilted discussions and overly brief answers to questions. It is best to use a friendly approach and start by asking open-ended, broad questions that allow the interviewees to talk freely about their programs. Since MS4 programs are not "one size fits all," it is sometimes best to have the interviewees describe their approach to each program area up front rather than ask questions from a list that may not be organized in a way that makes sense in the context of their program's activities. To ensure that all topics are covered in sufficient depth, the inspector should ask for clarification throughout and take a break at the end of the session to review the list of topics and ask follow-up questions if needed. Maintaining a conversational style will allow the interviewees to explain their answers and feel as though they can provide input into the interview process. Recommendations to make interviewing MS4 staff more effective are provided below:

- When possible, have "ground level" staff answer questions.
- Keep an inventory of follow up questions that need to be directed to other individuals.
- Begin with broad questions, then refine.
- Take time to clarify your understanding after some questions. For example: "You are saying that catch basin cleaning is the responsibility of Public Works, not Utilities, correct?"
- If warranted, ask the same questions to several individuals. The purpose of this is not to intentionally encourage inconsistent answers, but to further the inspector's understanding of the program by asking several staff members for input on a topic area.
- Consider using both direct questioning and "scenario" questioning to gain a better understanding of MS4 related activities. (Example of direct question: "How many MS4 outfalls are mapped on the City's GIS?", Example of "scenario" questioning: "If I am a citizen and observe a truck dumping an unknown liquid down a storm drain, how would I report this?")

3. Interviewing Field Staff

Interviewing MS4 field staff can play an important role in an inspection/audit. The inspector should determine:

- That person's responsibilities and their understanding of those responsibilities,
- Directives that have been given to the person by their superiors,
- Whether the person has corrected deficiencies in the past, and if not, why?

4. Waivers and Releases/Safety Requirements

If MS4 officials provide a blank sign-in sheet, log, or visitor register, it is acceptable for inspectors to sign in. Some MS4 facilities may also request that the inspector receive facility-provided safety training prior to site entry. If that is the case then DEQ inspectors may sign the document demonstrating that this training was provided. DEQ employees, however, must not sign any type of "Visitor Release" or "Waiver" that would release MS4 officials from responsibility for injury, or limit the rights of DEQ to use information gathered during the inspection.

Because a large part of a typical MS4 inspection takes place in the field and often on active construction sites, DEQ inspectors should always carry basic safety equipment with them to every inspection. **At a minimum, inspectors should have steel toed boots, reflective safety vests, safety glasses, and a hard hat.** Inspectors should **immediately** notify the MS4 and other appropriate contacts if anything is observed that has an imperative need to be addressed (e.g., dangerous situations, clear environmental harm, etc.).

5. Documentation Techniques

Providing documentary evidence (e.g., field log, photos, samples, etc.) during an inspection is the inspector's basic responsibility. Documentation serves to "freeze" the actual conditions existing at the time of the inspection, providing a "point in time" reference so that evidence can be examined objectively.

Field Notebook- Keeping detailed notes is critical, and inspectors should maintain a field log for this purpose. The field log should be a bound notebook with entries made in permanent ink, and any errors should be crossed out and initialed by the inspector. Language should be objective, factual, and free of personal feelings. Notebook entries should be associated with the MS4 program component being evaluated, and used to document how specific MS4 program compliance is achieved (or not achieved). MS4 records requested for the inspection may be used as a reference both during the inspection and in the inspection report.

Proper documentation is extremely important, and field notebooks may become a significant part of the evidence package if an inspection results in formal enforcement. Inspectors should be aware that it can take years for a case to proceed through the court process. If, for example, during an MS4 inspection the inspector observes a municipal employee washing out paint cans directly into a storm drain, the inspector would document the following in the field log:

- Detailed notes of what was observed
- Location, date, time, name/title of individual washing the cans
- Name of receiving water, any discernible effects and documented path of flow to receiving water
- Note that photographs were taken, and description of photos
- Applicable permit requirement(s) and citation(s)
- Applicable sections of the MS4 Program Plan that prohibit unauthorized discharge
- A determination as to whether this is systemic or a one-time occurrence

Photographs As a courtesy to MS4 staff, inspectors should ask if photographs may be taken during the inspection. Photographs are an important tool used to assist the inspector in preparing a thorough and accurate inspection report, to document conditions at the time of inspection, and as evidence in enforcement proceedings. Photos are important not only to document possible compliance issues, but also as a means of highlighting positive aspects of an MS4 program as well. Inspectors should consider the scale, location, and direction when taking photos. The inspector may take the following photos to convey a single field observation:

- Establishing shot
- Subject shot
- Detail shot

Photo logs are used to visually illustrate items noted during field inspections. A photo log can be an important part of an MS4 inspection report and can assist DEQ in assessing permit compliance. In general, it is important for inspectors to keep careful notes of the photographs taken, including the location, subject, and why the photograph was taken.

For an MS4 inspection, it is not necessary to photo document all aspects of the facilities inspected, however, photos should be used to highlight issues on site that may lend credence to an issue described in the MS4 Inspection Report. For example, stormwater problems at a municipal maintenance yard should be documented with photos to provide additional documentation of problems. During inspections of construction sites or industrial facilities, photos can help document the issues the permittee's inspector addressed. At a minimum, even if the photos are not used in the MS4 Inspection Report, the photos can help recall conditions at the sites visited.

6. MS4 Inspections/Conducting Field Activities

Listed below are examples of activities an inspector could observe/verify in the field during a typical MS4 inspection. The field activities are categorized by the usual MS4 program areas.

1. Public Education and Participation-Stencils and signage at stormwater drop inlets, BMPs, etc.
2. Illicit Discharge Program-Outfall screening activity, response to illicit discharge or chronic problem area (the inspector should always be alert to note any illicit discharges!)
3. Construction Program-Private site conditions, public site conditions, overall inspection process
4. Post-construction Program-Examples of private and public BMPs, overall inspection process
5. Pollution Prevention/Good Housekeeping-municipal facilities, inspection process, municipal activities

7. Closing Conference

MS4 officials are usually anxious to discuss the findings of an inspection before the inspector(s) leave, and the inspector should allocate adequate time for a closing conference. The closing conference is a critical element of any successful inspection/audit of an MS4, and gives the inspector an opportunity to discuss the **preliminary** findings of the inspection. During this meeting the inspector should review each part of the program assessed with MS4 officials and can describe compliance observations and identify areas of concern, answer any final questions, and request any additional information that was not available during the inspection. When communicating the preliminary findings, the inspector should:

- Take adequate time to compile preliminary observations
- Identify corrective actions and areas of concern
- Consider sorting the observations in order of program elements or relative seriousness

- Identify and be prepared to communicate both the strengths and weaknesses of the overall MS4 program
- Know and communicate the anticipated next steps

PART IV - EVALUATING SPECIFIC MS4 PROGRAM AREAS

This chapter of the guidance describes the process for conducting an inspection of specific MS4 program areas. The following program areas are covered:

1. Overall MS4 Program Management
2. Public Education and Participation (MCMs 1 and 2 for Phase II MS4s)
3. Illicit Discharge Detection and Elimination (MCM 3 for Phase II MS4s)
4. Construction Activities (MCM 4 for Phase II MS4s)
5. Post-Construction Stormwater Management (MCM 5 for Phase II MS4s)
6. MS4 Maintenance/Pollution Prevention Activities (MCM 6 for Phase II MS4s)
7. Industrial/Commercial Facilities (applicable only to Phase I MS4s)

A subchapter will be devoted to each program area listed above that describes/contains:

- Typical activities performed by the MS4/Program elements to address during the inspection
- Examples of documentation/records to review for the inspection
- Onsite and In-field Procedures for MS4 Inspections
- Potential Inspection/audit questions
- Common problems/issues identified during inspections

1. OVERALL MS4 PROGRAM MANAGEMENT

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

Comprehensive Stormwater Management Planning

Phase I and Phase II permittees are required to develop MS4 Program Plans designed to reduce the discharge of pollutants from the MS4 to the MEP. The MS4 Program Plan generally consists of a slate of BMPs developed by the permittee that describes how requirements of the permit will be met. The MS4 Program Plan should also incorporate by reference other documents and SOPs relevant to stormwater management (e.g., dry weather outfall screening procedures, TMDL Action Plans, written construction inspection Standard Operating Procedures {SOPs}, etc.) MS4 permittees are given a great deal of flexibility to develop an adaptive, iterative MS4 program specific for local conditions and situations.

Measurable Goals

According to the MS4 General Permit regulations (9 VAC 25-890-1, *et seq.*) that apply to Phase II MS4s, operators must reduce pollutants in stormwater to the MEP to protect water quality. The regulations specify that compliance with the MEP requirement can be attained by developing a MS4 Program that addresses the six MCMs previously described in this Guidance. MS4 Program Plans for both Phase I and Phase II MS4s must contain clearly defined measurable goals to evaluate the effectiveness of the BMPs developed to meet permit conditions.

For the DEQ inspector, verification that BMPs selected by a permittee have clearly defined measurable goals may be difficult, and warrants additional discussion. Often, permittees do not develop measurable goals that truly quantify and track progress towards desired outcomes in the MS4 Program Plan. Measurable goals associated with the BMPs in the permittee's MS4 Program Plan should be specific enough to be **enforceable** by the Department, and many permittees struggle with this concept. DEQ

inspectors may be able to provide recommendations to MS4s during inspections (or in the inspection report itself) to amend vague, unenforceable language in the MS4 Program Plan. The following examples are provided to illustrate vague versus enforceable language in MS4 Program Plans:

The City will **periodically** inspect municipal facilities. (not enforceable)

The City will conduct inspections of municipal facilities **each calendar year between January and March**. (enforceable)

The City has an **active** street sweeping program. (not enforceable)

All city owned streets will be swept on a **monthly** basis. (enforceable)

Assessment and Evaluation

MS4 Program Plan self-evaluations not only demonstrate progress, but also allow the permittee to adjust programming, funding, or staffing levels for the upcoming year to best use existing resources to maximize water quality benefit. In Virginia, MS4 permits require permittees to evaluate their programs on an annual basis to ensure compliance with permit requirements, and assess the appropriateness of selected BMPs and progress of those BMPs in achieving the identified measureable goals.

Total Maximum Daily Load (TMDLs)

MS4s in Virginia must develop TMDL Action Plans to meet the requirements and assumptions of any Waste Load Allocations (WLAs) for approved TMDLs within an MS4's watersheds. Schedules for TMDL Action Plan development are contained in MS4 permits. Technical evaluations of TMDL Action Plans are generally outside the scope of an MS4 audit or inspection. However, DEQ inspectors should determine if TMDL Action Plans have been developed and implemented in accordance with any schedule contained in the permit.

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

The following records may help in evaluating the permittee's program management structure. Ask for copies of relevant information where it will help in writing the report or documenting a permit violation.

Documentation	What to Look For
Stormwater program staff lists Organizational charts Contact names and responsibilities	Are specific departments and/or individual positions identified as responsible for each part of the MS4 Program Plan? Are lines of authority and responsibility clear?
Performance standards Program goals/measurable goals Implementation schedule	Has the permittee documented a schedule and goals for guiding the MS4 Program Plan in subsequent years? Are these goals specific enough for the MS4 Program Plan to be evaluated?
MOUs or other agreements	Does the permittee document partnerships with other agencies, nonprofit organizations, or other cooperating entities? Are the roles and responsibilities of each entity clearly identified?
Tracking systems Reporting and assessment procedures	Has the permittee established procedures for reporting or program assessment, both within the permittee's structure and between agencies?

Coordination meeting schedules, task force rosters

Do permittee staff responsible for implementing the MS4 Program Plan meet periodically?
Do municipal agency representatives meet to discuss MS4 Program Plan implementation?
Does the permittee meet with cooperating entities to discuss MS4 Program Plan implementation?

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

DEQ Inspectors should bring copies of the permittee's MS4 Program Plan and latest annual report with them to the inspection. Typically, each MS4 will have a coordinator or other principal contact, and this person would be the best to interview regarding overall program management.

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Has the permittee developed and implemented an MS4 Program Plan?
- Does the MS4 Program Plan contain a slate of BMPs designed to address all requirements in the MS4 permit?
- Does the MS4 Program Plan have clearly defined measureable goals associated with each BMP in the plan?
- Does the MS4 Program Plan incorporate by reference other documents, policies and procedures developed by the permittee to satisfy permit requirements (e.g., TMDL Action Plans, dry weather screening procedures, BMP inspection procedures, etc.)?
- Has the operator updated the MS4 Program Plan in accordance with any schedule outlined in the MS4 permit?
- Does the permittee have a "MS4 Coordinator" designated to lead and coordinate the MS4 program and activities?
- Does the MS4 Program Plan include an organization chart listing responsible parties for each MS4 program component?
- Does the permittee utilize intradepartmental coordination when implementing its MS4 program?
- Does the permittee have any formal agreement (e.g., an MOU) with other entities responsible for implementing portions of its MS4 program?
- Does the permittee use nonprofit organizations, watershed groups, or other community organizations to administer required elements of its MS4 program?
- Does the permittee conduct monitoring (e.g., biological monitoring, wet weather screening, ambient monitoring) as part of its MS4 Program?
- Has the permittee developed and implemented TMDL Action Plans for approved TMDLs where the MS4 has been given a WLA for a pollutant(s) of concern?
- Has the permittee assessed significant sources of pollutant(s) from facilities of concern owned or operated by the MS4?
- Are TMDL Action Plans updated in accordance with any schedules contained in the MS4 permit?
- Has the permittee developed and implemented a method (e.g., results from BMP, outfall, instream monitoring and/or modeling tools, or recordkeeping to track practice changes) to assess TMDL Action Plans for their effectiveness in reducing pollutants identified in the WLA?
- Does the permittee participate as a stakeholder in the development of any TMDL implementation plans applicable to their discharge?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

- The permittee lacks necessary intradepartmental coordination on MS4/stormwater issues (VERY COMMON!)
- The MS4 Program Plan does not have clearly defined, measureable goals to quantify and track progress toward desired outcomes
- The MS4 Program Plan has not been revised and updated based on permit schedules, or any evaluations of effectiveness.
- MS4s have not developed/implemented TMDL Action Plans in accordance with required schedules.

2. PUBLIC EDUCATION AND PARTICIPATION

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

Public education efforts aim to project information to the audience, while the goal of a public participation and involvement program is to encourage volunteerism, public comment and input on policy, and activism in the community. Many activities can and often do achieve both goals, therefore many permittees combine the two into one public outreach program component and develop joint materials. For example, a brochure about stormwater impacts could also invite residents to participate in a stream cleanup. In addition, it is common for several permittees to combine funds and produce one set of public outreach materials to distribute regionally or simply use another permittee's materials.

Goals and Objectives

A permittee's outreach program should include goals based on specific stormwater quality issues in the community or pollutants of concern as well as specific target audiences. The goals can be quantitative (i.e., numbers of classroom presentations per year) or qualitative (i.e., increased stormwater awareness among Spanish-speaking residents regarding illegal dumping demonstrated by awareness surveys). Goals can be short-term or long-term but should be designed to be reassessed on a regular basis. Goals should also be progressive; for example, a goal for the first two years may be based on increasing public awareness of certain issues, whereas a goal for subsequent years would be based on measurable changes in behavior as a result of increased awareness.

Though each permittee may select its own unique set of goals, the ultimate outcome of all programs should be to elicit specific changes in behavior that benefit water quality. Brochures and presentations are means to this end, but they do not necessarily indicate a meaningful and successful public education program.

Message Development

The permittee's stormwater outreach messages should be clear, specific, and tied directly to elements that each specific audience values, in addition to goals established in the MS4 Program Plan. Multiple messages may be necessary to address various audiences or behaviors.

Target Audiences

An outreach strategy should identify target audiences a permittee wants to reach with appropriate messages. Target audiences can be segmented by geographic location, demographics, occupation, or behavior patterns. Selection of a target audience can be based on stormwater quality issues and behaviors to be altered. The permittee should determine what information the target audience needs, gather information on the profile of the target audience, and collect information on the barriers to reaching this

target audience. As stormwater awareness is evaluated and the program evolves, the target audience may change as well.

Message Packaging

Permittees use various packages to deliver messages to different target audiences. The packages should be appropriate to the audience (i.e., demographic, employment, geographic location, etc.). Packages for messages can include brochures, TV and radio spots, videos, presentations, events, and other formats.

Distribution Mechanisms

There are many ways to distribute outreach messages and materials. Distribution methods should be specific to the message and audience. Permittees commonly partner with nonprofit organizations, watershed groups, or other government agencies to share message distribution costs and make best use of available resources. Often goals or permit requirements are tied to distribution; therefore, permittees should track distribution of materials, program-related presentations, and other delivery methods.

Evaluation Methods

Permittees can evaluate the effectiveness of an outreach strategy in a number of ways, but any method should be linked to established measurable goals. Some use public surveys to gauge changes in awareness or behavior of the target audiences. The surveys can be conducted in person at events, on the phone, or using Web-based survey tools. Others track quantifiable data such as brochures distributed, people trained, participation in events, volunteer hours, etc. Ultimately, permittees should track metrics showing the adoption of desirable behavior changes.

Public Participation Activities

Permittees must provide the public with opportunities (through promotion, sponsorship, or other involvement) to participate in local activities. Those activities should be aimed at increasing public participation to reduce stormwater pollution, improving water quality, and supporting local clean-up efforts. Some permittees have stakeholder workgroups that are involved in developing policy and programs. Many permittees encourage and facilitate involvement by coordinating or promoting community events and promoting volunteerism in the community through activities such as storm drain stenciling, stream cleanups, riparian tree plantings, and other programs. Permittees are also required to provide the public notification on the availability of the permit, the MS4 Program Plan and annual reports.

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

Records Review

The following records might help in evaluating the permittee’s public education and participation program. Ask for copies of relevant information where it will help in writing a report or documenting a permit violation.

Documentation	What to Look For
Public outreach or communication strategy	Target audiences, specific stormwater messages, tracking methods, measurable goals, a plan to review and modify the strategy over time.
Stormwater Web site	Pamphlets, calendars of events, hotlines, contact information, access to stormwater permit, MS4 Program Plan and annual reports, general stormwater

	information, volunteer opportunities.
Public awareness survey	Public awareness surveys may be available to assess either baseline awareness or movement towards measurable goals.

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

The public education and participation components of a MS4 Program may be implemented by one person or department (e.g., a communications office) or be a combination of efforts by many people, divisions, or departments. An inspector should ask the MS4 program coordinator about key staff to talk with prior to the inspection. It may be possible for the coordinator to relay all necessary information without having to track down numerous staff. The inspector may also want to request that copies of pertinent outreach materials be compiled to review during the inspection or taken to review afterward.

Evaluation of this program area will be primarily conducted with the permittee in the office or by reviewing materials before or after the inspection/audit. Most MS4 permittees utilize their websites as a primary source of providing stormwater information to the general public. The DEQ inspector should review websites/webpages established by the MS4 to disseminate information to the public. The inspector should note if those sites are easily found, or perhaps located in an obscure part of the website. If the DEQ inspector has difficulty locating stormwater information on a website, then it is also likely the general public would not see that information during a casual web search.

In the field, inspectors can make observations during other field activities to see where stormwater educational materials are available and distributed. For example, when visiting the permittee's building permit counter, the inspector can note the types of stormwater outreach materials available to applicants for construction project permits. While driving around the MS4 locality, inspectors should observe if posters, billboards, or other signs display stormwater messages. These types of field observations about the permittee's public education and participation activities can help assess the effectiveness of this program area.

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Does the permittee have existing BMPs in the MS4 Program Plan for public education and outreach?
- Does the MS4 Program Plan have clearly defined measureable goals associated with each BMP developed for public education and outreach?
- Are existing BMPs designed with the goal of increasing target audience knowledge about steps they can take to reduce stormwater pollution?
- Are existing BMPs designed with the goal of increasing target audience knowledge of hazards associated with illegal discharges and improper disposal of waste?
- Does the existing MS4 Program Plan contain strategies to target audiences/groups that are most likely to have significant stormwater impacts?
- Has the MS4 Program Plan been updated to identify three high-priority water quality issues that are linked to the discharge of stormwater pollutants (e.g., Chesapeake Bay nutrients, local bacteria TMDLs, illicit discharges from commercial sites, etc.)?
- Does the updated MS4 Program Plan identify and estimate the population size of the target audience or audiences who is most likely to have significant impacts for each high-priority water quality issue?

- Has the permittee developed relevant messages and associated educational and outreach materials (e.g., printed materials, radio and television ads, websites, social media, etc.) to reach the selected target audiences?
- Does the permittee have a designated area (e.g., a separate webpage) on its website to provide stormwater educational info to the general public?
- Is that information easily found and located in a logical place on the website?
- Does the permittee conduct sufficient education and outreach activities to reach an equivalent of 20% of each high priority target audience annually?
- Does the permittee provide for the adjustment of target audiences and messages in order to address any weaknesses or shortcomings?
- Does the permittee have existing BMPs in the MS4 Program Plan that addresses public involvement/participation?
- Does the MS4 Program Plan have clearly defined measureable goals associated with each BMP developed for public involvement/participation?
- Has the permittee updated the MS4 Program Plan in accordance with any schedule contained in the MS4 permit?
- Does the permittee comply with any applicable federal, state, and local public notice requirements?
- Does the permittee maintain an updated MS4 Program Plan that is posted on its webpage each year within 30 days from the date the annual report is due to DEQ?
- Does the permittee post copies of each annual report within 30 days from the date the report is due to DEQ?
- Does the permittee participate, through promotion, sponsorship, or other involvement, in a minimum of four local activities (e.g., stream cleanups, hazardous waste cleanup days, Earth Day events, etc.) on an annual basis?
- Does the MS4 Program Plan contain written procedures for implementing the public involvement/participation program?
- Does the permittee comply with all applicable federal, state and local public notice requirements?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

- Permittees set inappropriate or immeasurable goals for activities.
- Permittees are not including key target audiences.
- Permittees are not customizing the materials for the target audience.
- Permittees are not developing materials for commonly spoken languages.
- Permittees are not distributing the materials adequately using appropriate methods for the target audience.
- Permittees are not facilitating involvement in program development, implementation, and improvement during the course of the permit term.
- Permittees are not coordinating or promoting events or activities that would improve water quality or change behaviors of concern.

3. ILLICIT DISCHARGE DETECTION AND ELIMINATION

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

Legal Authority

Permittees must develop and implement an effective program to prohibit illicit discharges from entering the MS4. The prohibition of illicit discharges should be linked to an ordinance or other legal authority to ensure proper enforcement.

Mapping

In Virginia, both Phase I and Phase II MS4 permittees are required to map all known outfalls and give each a unique identifier. In addition, permittees must map all receiving waters and estimate acreage drained by each outfall. Although there may not be a permit requirement attached, to be most useful, these maps should also include the storm drain pipe network and catch basin locations, and outfalls and drainage areas should be prioritized in order of their potential to be a source of illicit discharges. Ideally, this information would be managed in a database linked to a GIS, however this may not be a permit requirement.

Field Screening

Field screening of outfalls during dry weather can help to identify illicit discharges in priority areas. Of particular concern are areas of older development, areas with a high concentration of automobile-related industries, and areas with high concentrations of industrial facilities among others. Documentation of the illicit discharge detection and elimination (IDDE) program component in the MS4 Program Plan should include a detailed summary of the departmental responsibility for field activities, frequency of inspections, inspection procedures, inspection equipment, and documentation procedures for field activities.

Investigation of Potential Illicit Discharges

Municipalities should have a written procedure for how they will locate, eliminate, and prevent illicit discharges to the MS4. The procedure should address both spills and illegal connections to the MS4 and should be available to all staff responsible for responding to illicit discharges. The procedure should also specify how spills and illicit discharge incidents are tracked.

Spill Response and Prevention

The purpose of spill response programs is to reduce the risk of spills and improve response and cleanup when they occur. These programs usually require coordination among fire, police, health, and public works departments. The departments responsible for implementing the program should be identified and the MS4 Program Plan should address employee training, reporting procedures, spill containment, storage and disposal activities, documentation, and follow-up procedures. For each of these elements, particular attention should be given to good housekeeping and materials management practices. Procedures can be implemented through modification of ordinances and enforcement or through coordination with existing spill prevention or spill containment programs. Most permittees address this element through the development of a spill response plan.

Public Awareness and Reporting Program

Permittees should promote, publicize, and facilitate public reporting of illicit discharges or water quality impacts associated with discharges to the MS4 or receiving waters. Typical public awareness and reporting programs may include developing a hotline number, educating school students, using inserts in utility bills, and developing media announcements. Permittees should have a system in place to quickly route all public calls to appropriate staff, track the calls, and document response and enforcement, if used, for reporting purposes. (NOTE: IDDE public awareness efforts are often discussed during evaluation of the Public Education and Participation program area.)

Proper Management of Used Oil and Toxics

Permittees should provide information on where the public can safely recycle or dispose of used oil and toxic materials to minimize illegal dumping.

Preventing Sanitary Sewer Discharges

Although not a specific requirement of Phase II programs, Phase I MS4 permittees are required to provide in permit applications a description of controls to limit infiltration to the MS4 of seepage from municipal sanitary sewers, if necessary. Many permittees have developed a sanitary sewer overflow program to address discharges from their sanitary sewers. Others have developed programs to promote proper maintenance of septic tanks.

Education and Training

Training for staff should include spill response procedures and procedures on how to locate, eliminate, and prevent illicit discharges. Permittees should also educate the public on the hazards of illegal dumping and illicit discharges to the MS4.

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

Consider reviewing the following records during the on-site inspection of the permittee's IDDE program area.

Documentation	What to Look For
Ordinance and policies	Code which allows the permittee to prohibit illicit discharges from commercial, industrial, or residential sources Should include or reference an enforcement policy
Enforcement policy	Should describe the process for eliminating the source of an illicit discharge and for obtaining recourse or abatement if necessary Should describe which staff are authorized to enforce the applicable ordinances and which enforcement mechanisms are available
Illicit discharge tracking records	Database or other system used to track the following information: The date that the illicit discharge was observed/reported The result of the investigation Follow-up actions once discharges are located The date the investigation was closed.
Dry-weather monitoring or screening records	Describes the location and description of dry weather flows Monitoring data associated with a discharge Information about the source of a discharge and actions take to identify sources
Spill Response Plan and records	These records may be maintained by a different department such as the fire department, but the permittee should have access to the information and be provided a regular report of spills that impact the MS4
Recycled oil and household hazardous waste educational materials	These materials may be presented during the public outreach part of the inspection
Web site or other educational materials for reporting illicit discharges and dumping	Review educational materials to determine if the general public has adequate information to identify and report illicit discharges

Documentation	What to Look For
Training records	Training records should be available to document that the permittee's employees are regularly trained to recognize an illicit discharge

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

MS4 staff responsible for implementing IDDE can be from multiple departments, although this varies from permittee to permittee. The primary responsibility for detecting and investigating illicit discharges normally falls to the public works department for traditional MS4s. Public works field crews are in the field every day and are the best source of information about what is happening in the permit area. Also, public works departments often have access to the maps and equipment necessary to track discharges to their source. Normally, public works field staff are not authorized to use enforcement against dischargers, so code enforcement staff may be necessary to investigate cases. Many permittees use the fire department for cleanup of spills, and sometimes police departments are charged with manning a "hotline" for complaints called in by citizens and for ultimately investigating dumping or other illegal activities.

IDDE activities can be difficult to evaluate in the field. If, during an inspection, the permittee receives a report of a potential illicit discharge, the DEQ inspector could accompany the response staff to view their response procedures. Other in-field activities include viewing the equipment available for responding to illicit discharge events (e.g., response trucks, spill containment equipment, video equipment for investigating storm drains) and talking to field staff about their knowledge of and training in illicit discharge identification, reporting, and response.

The DEQ inspector may be able in some cases to observe MS4 staff conduct dry-weather outfall screening in the field by taking the DEQ inspector to selected outfalls and demonstrating screening procedures. Although field activities are somewhat subjective, the DEQ inspector should be able to get a sense of whether MS4 staff are aware of illicit discharges, and are proactive in identifying and addressing them. For example, if an MS4 construction inspector observes an obvious illicit discharge while driving to a site, does he/she ignore the incident or stop and report it?

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Does the permittee have existing BMPs in the MS4 Program Plan that addresses illicit discharge detection and elimination?
- Does the MS4 Program Plan have clearly defined measureable goals associated with each BMP developed for illicit discharge detection and elimination?
- Has the permittee updated the MS4 Program Plan in accordance with any schedule contained in the MS4 permit?
- Has the permittee developed a storm sewer system map showing location of all MS4 outfalls and assigning a unique identifier for each outfall?
- Does the map show the name and location of all waters receiving discharges from MS4 outfalls, along with the associated Hydrologic Unit Code (HUC)?
- Does the map contain the names of all impaired surface waters that receive discharges from MS4 outfalls?
- Does the map estimate the MS4 acreage served by each outfall?
- Does the map contain the names of any applicable TMDLs receiving MS4 discharges?
- Does the map show any additional storm sewer features such as storm drain pipes, drop inlets, catch basins, etc.?

- Has the permittee notified downstream MS4s in writing that a physical interconnection exists?
- Has the permittee prohibited through an ordinance (or other legal mechanism) nonstormwater discharges into its storm sewer system?
- Has the permittee developed and implemented written procedures to detect, identify, and address any unauthorized nonstormwater discharges to the MS4 system?
- Has the permittee developed written dry weather screening methodologies to detect and eliminate illicit discharges to the MS4 that include field observations and field screening?
- Do dry weather screening written procedures prioritize field screening activities based on such criteria as age of infrastructure, land use, historical illegal discharges, dumping or cross connections?
- Does the permittee screen a minimum of at least 50 outfalls annually?
- Do written dry weather screening procedures contain methodologies to collect general information such as time since last rain, quantity of last rain, site descriptions, estimated discharge, and visual observations (e.g., color, clarity, floatables, stains, odors, etc.)?
- Do written dry weather screening procedures describe a time frame upon which to conduct an investigation to identify and locate the source of any observed discharge?
- Do written dry weather screening procedures contain mechanisms to eliminate identified sources of illicit discharges including a description of the policies and procedures for when and how to use legal authorities?
- Do written dry weather screening procedures contain methods for conducting a follow up investigation in order to verify that the discharge has been eliminated?
- Do written dry weather screening procedures contain a mechanism to track all investigations to document date discharge was observed, results of investigation, resolution of investigation, and date investigation was closed?
- Does the permittee promote, publicize, and facilitate public reporting (e.g., such as a “hotline”) of illicit discharges into or from the MS4?
- Does the permittee conduct investigations in response to complaints from the public to ensure corrective measures have been implemented by the responsible party?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

- IDDE programs are largely reactionary spill response programs and do not contain a proactive element to detect or prevent discharges.
- The permittee lacks adequate documented procedures for how to conduct illicit connection and illegal discharge investigations (e.g., the permittee does not have written procedures for tracking and identifying the source of a discharge).
- The permittee fails to conduct any dry-weather screening to identify illicit discharges.
- If a discharge is found, the permittee does not have specific procedures to determine whether the discharge is illicit. In most cases, unless the discharge is obviously illicit (e.g., presence of discoloration, oil sheen), the permittee assumes the discharge is groundwater and does not conduct further investigation of the quality or source of the discharge.
- Staff are not adequately trained on illicit discharge identification, reporting, and response.
- The permittee does not track illicit discharge events and does not target areas of the MS4 for additional inspection based on areas with past incidents.

4. CONSTRUCTION ACTIVITIES

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

Ordinance/Legal Authority

In Virginia, local government MS4s (cities, counties, towns) are required to adopt a stormwater ordinance that addresses both construction site stormwater runoff control, and post-construction management in new and re-development. The ordinance(s) must include the following minimum information:

- Identification of plan review, inspection, and enforcement authorities;
- E&S Control plan review process;
- Requirements for compliance with Stormwater Pollution Prevention Plan (SWPPP), Pollution Prevention, and Stormwater Management plans;
- Inspection and monitoring;
- Long-term maintenance of Best Management Practices (BMPs); and
- Enforcement and civil penalty procedures

Non-traditional MS4s such as military bases and universities can establish legal authority by a base order, specific contract language, SOP, or general policy statement.

Construction Site Inventory

The MS4 should have an inventory of active and completed construction projects that includes information about the site and inspections that the permittee has conducted, including inspection findings and follow-up (letters, enforcement actions, additional inspections). The permittee should also develop procedures for the receipt and consideration of complaints submitted by the public. Ideally, this information would be managed in a database and linked to a GIS for optimum tracking.

Plan Review Procedures

The review of E&S Plans and SWPPPs should be based on formal review specifications, a checklist, or similar criteria. Plan review staff should document the BMPs considered, whether they were addressed on the plans, and any identified deficiencies.

Construction Site Inspections

A key element of the construction component is the frequency at which sites are inspected. Virginia MS4 permits require an inspection frequency consistent with the Virginia Erosion and Sediment Control Law and attendant regulations. Active permitted construction sites must be inspected at least once during every two-week period, and within 48 hours of any runoff producing storm event.

Program Support and Resources

Permittees should have an established source of funding for their construction program, including adequate resources for frequent inspections and plan review. Funds often come from fees paid by the construction operators.

Enforcement

Permittees should have an established, progressive enforcement policy that clearly describes the action to be taken for common violations. Enforcement authority typically includes verbal and written warnings, fines, and “stop work” orders. Verbal warnings should be documented in addition to all written violation notices. The enforcement policy should also address how repeat or serious violations will be addressed, including referral of the case to DEQ in the most egregious cases.

NOTE: It is a good idea for DEQ inspectors to review several enforcement cases (see under documentation below) to assess whether the permittee is adequately ensuring compliance. Lack of fines, “stop work” orders, or other enforcement actions do not necessarily indicate that the permittee’s enforcement is inadequate. A lack of enforcement cases could be the result of an effective inspection

program, or it could indicate problems with the inspection records, inspection procedures, or even lack of commitment from the permittee to escalate enforcement.

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

The following records may help in evaluating the compliance and performance of the permittee's construction program. Ask for copies of relevant information where it will help in writing a report or documenting a permit violation.

Documentation	What to Look For
Local ordinances/legal authority	E&S Ordinance Stormwater Ordinance Base Order Specific contract language
Design standards, BMP manuals, and fact sheets.	These can be state or local standards or be taken from a non-regulatory source.
Construction plans reviewed and approved by the permittee	Where possible, try to review the plans for projects that you will also visit during the field portion of the inspection.
Construction project inventory or database	Does one exist? How often is it updated? What is the source for the inventory?
Enforcement progressive response plan or procedure	Is the enforcement process documented and codified? Are roles of individuals or departments clearly defined?

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

The onsite (office) portion of an evaluation of an MS4's construction program should focus on the regulatory mechanism to require and enforce the program, plan review procedures, and E&S/stormwater inspection procedures. In-field activities to evaluate the construction inspection program typically consist of accompanying and observing the MS4 construction inspector in the field as he/she conducts inspections of active construction sites.

The main purpose of the field evaluation is to assess the permittee's construction inspection program; how knowledgeable the inspector(s) are about stormwater requirements and BMPs, how thorough of an inspection they conduct, and how they handle problems identified at construction sites. Let the MS4 construction inspector lead the inspection; the DEQ inspector should strictly observe. Discourage MS4 construction inspectors from merely describing the inspection process (i.e., do not let the inspector "explain" how they would conduct the inspection, but ask them to show you).

NOTE: During the MS4 inspection it is not appropriate to conduct an inspection for compliance issues observed at construction sites. Rather, the role of the DEQ inspector relative to the MS4 inspection is to assess the MS4's effectiveness in addressing problems and bringing the site back into compliance. In Virginia, traditional MS4 permittees are required to operate local Virginia

Stormwater Management Programs but that should not be confused with the intent and purpose of an MS4 inspection.

For Phase I and larger Phase II MS4s, the inspector should schedule up to 3 to 4 hours for construction inspections, and should visit a minimum of two construction projects. Inspectors should be aware that travel time between sites may be significant, and they should plan accordingly. As the MS4 construction inspector conducts his/her inspection, the DEQ inspector should observe the following:

- Is the inspector knowledgeable on design criteria for erosion and sediment control measures and stormwater BMPs?
- Is the inspector familiar with the VESCP regulations, VSMP regulations, and construction GP requirements?
- Does the inspector check the approved plans at the construction site?
- Ask the inspector if he or she has visited this particular site before. If the answer is no, the inspector should ask to see the plans, have reviewed them ahead of time, or brought a copy so he or she knows what BMPs have been approved for that site.
- Does the inspector use a checklist or otherwise document inspection findings in the field?
- What kind of written feedback is provided to the operator and within what timeframe do violations need to be addressed?
- What kind of report is generated as a result of the inspection? Does it detail all problems found at the site or does it document only that the inspection occurred?
- Are findings from inspections tracked in a central location or database?
- How does the inspector track required follow-up inspections or enforcement actions?
- Is the inspector thorough? Does the inspector walk the entire site and identify all potential problems?
- Does the inspector note flow pathways and check for discharges from the site at outfalls or to storm drain inlets?
- What type of stormwater training has the inspector received?

The in-field activity is a good opportunity for DEQ inspectors to ask the MS4 inspector some of the same questions asked during the office portion of inspecting this program area. The goal of this questioning is to gauge whether the methodology used for in-field inspections is consistent with procedures developed by MS4 program management for inspections.

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Does the permittee have existing BMPs in the MS4 Program Plan that address construction site stormwater runoff control?
- Does the MS4 Program Plan have clearly defined measureable goals associated with each BMP developed for construction site stormwater runoff control?
- Does the MS4 Program Plan reference/describe the legal authority (e.g., ordinance, permit, order, specific contract language, etc.) used to address discharges entering the MS4 from land-disturbing activities?
- Does the MS4 Program Plan contain written plan review procedures utilized in plan review?
- Does the MS4 Program Plan contain written inspection procedures and all associated documents utilized during inspections?
- Does the MS4 Program Plan contain written procedures for compliance and enforcement, including a progressive compliance and enforcement strategy?
- Does the MS4 Program Plan describe the roles and responsibilities of each of the permittee's departments or divisions in implementing construction site stormwater runoff controls?

- Does the permittee have a system in place to track all regulated land-disturbing activities, including the acres disturbed, the total number of inspections, and summaries of any enforcement actions taken for each land-disturbing activity?
- Is the permittee an approved VSMP authority as defined in § 62.1-44.15:24 of the Virginia Stormwater Management Act?
- If the permittee is an approved VSMP authority, does it require evidence of coverage under the VSMP Construction GP before authorizing land-disturbance to begin?
- If the permittee is an approved VSMP authority, does it review stormwater management plans for land-disturbing activities?
- If the permittee is an approved VSMP authority, does it inspect land-disturbing activities during construction for compliance with the approved E&S Plan? compliance with the approved stormwater management plan? development and implementation of the pollution prevention plan?
- Does the permittee have Department approved annual standards and specifications that describe how land-disturbing activities will be conducted?
- Has the permittee established its legal authority (e.g., ordinance, permit, order, specific contract language, etc.) to address discharges entering the MS4 from land-disturbing activities?
- If applicable, does the permittee's legal authority address discharges entering the MS4 from land-disturbing activities as defined in § 62.1-44.15:51 of the Code of Virginia that result in the disturbance of 10,000 square feet or greater?
- For land-disturbing activities in Tidewater jurisdictions subject to the Chesapeake Bay Preservation Act, does the permittee's legal authority address discharges entering the MS4 from land-disturbing activities that disturb 2,500 square feet or greater ? And located in areas designated as Resource Protection Areas (RPA), Resource Management Areas (RMA) or Intensely Developed Areas (IDA), pursuant to the Chesapeake Bay Preservation Act and regulations?
- Does the permittee ensure that land disturbance activities not begin until Erosion and Sediment Control (E&S) plans (or, when applicable, agreements in lieu of a plan) for those activities that are approved by a Virginia Erosion and Sediment Control Program (VESCP) authority?
- Does the permittee ensure that operators inspect land-disturbing activities upon initial installation of E&S Controls? at least once during every two week period? Within 48 hours of any runoff-producing storm event? And upon completion of the project?
- Does the permittee ensure that E&S/stormwater inspections are conducted by qualified personnel?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

- When E&S inspections are included as part of building inspections, E&S control may be seen as a less important aspect of the inspection compared to other aspects, such as electrical or plumbing.
- The MS4 inspectors may lack the training and time necessary to conduct thorough E&S/stormwater inspections.
- Construction inspectors sometimes lack the authority to enforce the local ordinance.
- The inspectors may not follow a formal, written, progressive enforcement policy, or such a policy does not exist.
- Construction inspectors do not document inspection results using a checklist or other document.
- Inspectors do not conduct thorough inspections (i.e., drive-by inspections are common).
- Construction inspectors do not verify that BMPs approved on plans are actually installed at the project.

- Construction inspectors do not inspect to determine if BMPs are adequately maintained.
- The MS4 is not adequately tracking inspections and inspection results.
- The MS4 is not verifying general permit coverage before approving plans for construction disturbing one acre or more.
- Plan review staff lack adequate guidance and criteria for reviewing erosion and sediment control plans.

5. POST-CONSTRUCTION STORMWATER MANAGEMENT

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

Ordinance/Legal Authority

The legal authority should have language requiring that all new development and significant redevelopment projects incorporate stormwater management BMPs and submit a plan that complies with Virginia's design criteria requirements. These requirements should be detailed in an ordinance or other legal authority. Ideally, the ordinance will outline the contents of an approvable plan and responsibilities for operation and maintenance of approved BMPs. The operation and maintenance section should also describe who is responsible for inspections and maintenance (e.g., the homeowner, homeowners' association, permittee, etc.).

Post-Construction BMP Standards

While the legal authority described above should require the installation of BMPs at sites, a permittee should also have additional specifications or guidance on what types of BMPs are expected or required. In Virginia, stormwater BMPs must meet the appropriate water quality and water quantity design criteria in Part II B of the VSMP regulations (9VAC2525-870-62 *et seq.*).

Plan Review and Approval Procedures

The review of post-construction plans should be based on formal review specifications, a checklist, or similar criteria. Plan review staff should document the BMPs considered, whether they were addressed on the plans, and any identified deficiencies. Some permittees use contract staff to review some or all plans. Be sure to review plans completed by contractual as well as permittee staff.

Post-Construction Stormwater Management Facility Inventory

In Virginia, MS4 permittees are required to maintain an electronic database detailing the types and locations of all known stormwater management facilities that discharge to the MS4. The database must also include the total number of acres treated by each stormwater management facility, as well as the breakdown of pervious and impervious acres. Additional information permittees must have in the database include the following: date the facility came online, the sixth order Hydrologic Unit Code (HUC) in which the facility is located, the name(s) of any impaired water to which the facility discharges, whether the facility is operator owned or privately owned, if a maintenance agreement exists for privately owned facilities, and when the facility was last inspected. Ideally, the permittee would link information in the database to its GIS system for optimum tracking. Post-construction stormwater management facilities must be inspected and maintained to remain effective, so tracking conditions and ages of the structures, as well as the inspection findings, is important for ensuring that proper maintenance occurs for the life of the facility.

Stormwater Management Facility Inspection and Maintenance

Proper installation, operation, and maintenance are critical to optimizing the effectiveness of post-construction stormwater management facilities. If those facilities are not maintained, they can become

concentrated sources of pollutants themselves. Comprehensive “as built” inspections are important at the conclusion of a project to ensure the facility has been built properly, and regular inspections are critical to ensure the facility is being maintained as needed. Permittees may inspect private facilities, but most ensure that inspections take place by requiring maintenance agreements.

Enforcement

Legal authority is needed to require owner/operators to maintain stormwater management facilities. This can be outlined in a maintenance agreement or other binding contract, but it must be included in municipal code or regulation as well. The permittee should have available enforcement actions to require the owner/operator to perform necessary inspections and maintenance. Some permittees have authority to abate problem facilities (i.e., maintain the facility and charge the owner/operator) if necessary.

Public Construction Projects

Municipal permittees must apply the same local requirements to public construction projects as is required of private projects. Some municipal permittees develop and design public construction projects in-house without direct involvement from the department that reviews most private construction projects; therefore, it is important that the public project designers are trained and proficient in stormwater BMPs as well. If the permittee hires outside designers for public projects, stormwater guidelines should be provided to them to ensure compliance with local and general permit requirements. Permittees should have an inventory of publicly owned stormwater management and treatment facilities and should have an inspection and maintenance program established for those facilities.

Training and Education

Permittees should provide training to plan review and stormwater management facility inspection staff (if applicable).

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

The following records might help in evaluating the compliance and performance of the permittee’s post-construction program. Ask for copies of relevant information where it will help in writing a report or documenting a permit violation.

Documentation	What to Look For
Local ordinances	One or more ordinances may be used by a permittee to regulate post-construction BMPs.
Design standards, BMP manuals, or fact sheets	These can be state or local standards or be taken from a non-regulatory source.
Post-construction plans reviewed and approved by the permittee	Where possible, try to review the plans for projects that you will also visit during the field portion of the inspection.
Post-construction BMP tracking system	Database or other system used to track the location of post-construction stormwater management facility that have been installed and the maintenance performed or required for each facility.

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

When evaluating the post-construction, new and redevelopment component of a MS4 Program Plan, it is helpful to discuss the process chronologically in the order that a project would occur. The inspector should ask the permittee's planning staff to describe the process from the point of a developer coming to the MS4 to propose a project. Discuss post-construction stormwater management facilities that may be required for new and redevelopment projects, how and when developers are informed of the stormwater requirements in the initial planning stages, how plans are reviewed for stormwater standards, on what legal authority requirements and standards are based, what is required for plan approval, how the facilities are inspected during and after construction, and how the permittee ensures that stormwater management facilities are adequately operated and maintained. Typically, the onsite portion of the inspection for post-construction stormwater management will involve interviewing planning and engineering staff. Planners usually work with developers to determine what is required for plan submittal, but engineering staff may actually review the plans and verify design calculations.

In-field inspection activities primarily focus on verifying that stormwater management facilities approved by the permittee were installed and are being maintained properly in the field. The inspector should select several completed projects that were subject to post-construction requirements, and visit those sites in the field. The inspector should note whether stormwater management facilities were installed as designed, or were modified or removed after the project was completed. In addition, in-field inspection activities should include inspections of publicly owned stormwater management facilities to verify that they are being adequately maintained.

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Does the permittee have existing BMPs in the MS4 Program Plan that address post-construction stormwater management?
- Does the MS4 Program Plan have clearly defined measureable goals associated with each BMP developed for post-construction stormwater management?
- Does the MS4 Program Plan include a list of the applicable legal authorities (e.g., ordinances, orders, contract language, etc.) used to ensure compliance with permit requirements for post-construction stormwater management?
- Does the MS4 Program Plan include written policies and procedures to ensure that stormwater management facilities are designed and installed in accordance with water quality and water quantity design criteria required by the VSMP regulations (9VAC25-870)?
- Does the MS4 Program Plan include written policies and procedures to ensure that stormwater management facilities are designed and installed in accordance with any Department approved annual standards and specifications?
- Does the MS4 Program Plan include written policies and procedures the permittee uses to conduct inspections?
- Does the MS4 Program Plan include written procedures for inspection, compliance, and enforcement to ensure maintenance of private stormwater management facilities is conducted so those facilities continue to function as designed?
- Does the MS4 Program Plan include written procedures for inspection and maintenance of operator owned stormwater management facilities?
- Does the MS4 Program Plan describe the roles and responsibilities of each of the permittee's departments or divisions in implementing post construction stormwater management required by the permit?
- For new development and development on prior developed lands in Tidewater localities subject to Chesapeake Bay Act regulations, does the permittee address post construction runoff from land disturbing activities greater than or equal to 2,500 square feet in areas designated as RPA, RMA, or IDA?

- Does the permittee require that stormwater management plans are approved by the appropriate VSMP authority prior to land disturbance?
- Does the permittee require owners of private stormwater management facilities to develop a recorded inspection schedule and maintenance agreement?
- Does the permittee implement a schedule designed to inspect privately owned stormwater management facilities at least once every five years?
- Does the permittee use its legal authority for enforcement of maintenance on private stormwater management facilities if maintenance is neglected by the owner?
- Does the permittee use strategies other than maintenance agreements (e.g., homeowner outreach and education, periodic inspections, etc.) to promote long term maintenance of stormwater control measures designed to treat stormwater from individual residential lots?
- Does the permittee inspect stormwater management facilities owned by the MS4 annually?
- If MS4 owned stormwater management facilities are not inspected annually, does the permittee implement an alternative inspection schedule based on facility type and expected maintenance needs?
- Does the permittee maintain an updated electronic database of all known stormwater management facilities, both public and private, that discharge to the MS4?
- Does the electronic database of stormwater management facilities contain all information (e.g., facility type, location, impervious and pervious acres treated by facility, date brought online, impaired receiving waters, etc.) required by the permit?
- Does the permittee annually track and report the total number of inspections completed, and the number of enforcement actions taken to ensure long term BMP maintenance?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

The following are some areas where inspections commonly find problems in post-construction programs. These areas should be closely considered during inspections:

- The plan review staff lack training on design requirements for development standards of new development projects.
- The permittee lacks review criteria, checklists, or a formal plan review process to assist plan review staff in reviewing development projects.
- The permittee institutes blanket BMP requirements (i.e., those that apply to all projects) that do not take into account the development setting.
- The permittee institutes stormwater management facility requirements that act as unintended barriers to better models for development and redevelopment.
- The permittee does not consistently condition plans with post-construction stormwater controls.
- The permittee does not require inspection and maintenance of post-construction controls.
- The permittee lacks a system to track approved stormwater management facilities for inspections and ongoing maintenance.

6. MS4 MAINTENANCE/POLLUTION PREVENTION ACTIVITIES

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

Infrastructure Mapping and Characterization

Debris, floatables, sediment, metals, and other pollutants are caught in the MS4 and a regular program to inspect, clean, and repair components of this infrastructure will reduce the pollutants leaving the system and entering surface waters. A map of the MS4 is important for the permittee to plan for and track proper

maintenance of inlets, catch basins, outlets, conduits, and stormwater management structures such as detention basins.

Public Streets Operation and Maintenance

The MS4 Program Plan should address and include various practices for operating and maintaining public streets, roads, and highways that reduce the impact on receiving waters of discharges from municipal storm sewer systems. These practices may include regular street sweeping and proper use of BMPs during street maintenance activities. In addition, where applicable, permittees should consider deicing agent application methods that minimize the discharge of pollutants into the MS4, as well as salt and sand storage, fleet maintenance, fueling, and washing.

Flood Management

Some permittees may have municipal or regional flood management projects to address water quantity impacts to receiving waters.

Public Facilities Operation and Maintenance

The MS4 Program Plan should include a mechanism to inventory and assess the impact of stormwater runoff from municipal facilities. The inventory should include all facilities that treat, store, or transport municipal waste as well as industrial/commercial facilities (facilities covered by a general permit as well as those defined by the Industrial/Commercial Facilities program area). Facilities with activities characterized as a potential threat (“high priority facilities”) are required to develop site specific Stormwater Pollution Prevention Plans (SWPPPs) with site maps, inspection schedules, and BMPs to reduce water quality impacts.

Pesticide, Herbicide, and Fertilizer Application and Management

The MS4 Program Plan should include a component to reduce pollutants associated with the application of pesticides, herbicides, and fertilizer. This program should include, as appropriate, educational activities, permits, certifications and other measures for commercial applicators and distributors, and controls for application in public right-of-ways and at permittee owned or operated facilities, such as playing fields and other recreational facilities. In Virginia, MS4s that apply fertilizer to contiguous areas greater than one acre must develop and implement turf and landscape nutrient management plans. Those plans must be developed by a certified nutrient management planner.

Training and Education

To ensure that maintenance staff is knowledgeable and proficient in the most effective approaches to minimizing stormwater pollution from facilities and activities, permittees are required to provide periodic training for field staff. This training may be presented in-house or staff may attend trainings provided by the permitting authority or industry. It is important to cross-train any contracted staff used for field work as well. Many permittees also provide general stormwater awareness training to all employees.

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

The following records might help in evaluating the compliance and performance of the permittee’s MS4 maintenance activities. Ask for copies of relevant information where it will help in writing the report or documenting non-compliance requiring corrective action.

Documentation	What to Look For
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Documentation	What to Look For
Tracking systems Catch basin cleaning Street sweeping Pump station maintenance Structural BMP maintenance	What type of water quality-related information is tracked (i.e., tons of material swept)? Does the permittee set priorities and goals for MS4 maintenance activities each year? How are these priorities and goals established? Pollutants of concern? Watersheds of concern? Review how these activities are summarized for the annual report.
In-field inspection sheets	What guidance is provided to inspectors or maintenance crews to ensure they're properly inspecting and maintaining stormwater infrastructure?
Maintenance SOPs	Review standard operating procedures or any employee manuals or fact sheets used by permittee staff to conduct their day-to-day activities to determine if maintenance procedures for stormwater BMPs are described.
List of municipal facilities	Have the facilities been prioritized based on potential water quality impacts? Are the facilities inspected? How often? Who inspects?
MS4 maintenance facility SWPPPs	Are SWPPPs (or equivalent) for permittee-owned or -operated maintenance yards, public transit facilities that perform maintenance, or other facilities developed per permit schedule and adequately addressing stormwater? When were the SWPPPs last updated?
Training schedule	Review training records to determine how often training is provided, and who is required to attend
Pesticides, herbicides, and fertilizers Application records and protocols Applicator certifications and training	Has the permittee tracked the types and amounts of chemicals applied in the permit area, if and as required by their permit? Does the permittee have state-certified pesticide applicators? Are the applicators' certifications up to date?
Flood management	Review the permittee's capital improvement project list for flood drainage or flood management projects. Review the permittee's watershed master plans or flood drainage master plans for flood management projects.

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

MS4 maintenance/pollution prevention activities include a large variety of facilities and activities necessary to operate and maintain a permittee's infrastructure, properties, and equipment assets; which encompass roads, streets, the storm drain system, parks, and various maintenance and other MS4 owned facilities. When inspecting this program area, the DEQ inspector should focus on how these activities and facilities might impact stormwater quality. The inspector should look for the following during the inspection:

- How the permittee has inventoried all its infrastructure and facility maintenance activities
- How the permittee has reviewed facilities and activities to assess potential impacts on stormwater quality
- Whether the permittee has revised activities or implemented new measures to protect stormwater quality

MS4 maintenance staff should be trained on stormwater BMPs and principles, and have clear guidance on appropriate stormwater BMPs to use during typical maintenance operations and facilities management activities.

For most traditional MS4s (e.g. municipalities), the majority of functions normally are performed by public works staff. However, various departments may be involved in the MS4 maintenance/pollution prevention program area, and the inspector may want to interview staff from other areas such as public utilities, parks and recreation, etc. It is a good idea for inspectors to interview managers as well as field staff when possible.

The primary in-field activity is an inspection of the permittee's public works yard(s) or other type of permittee owned or operated facility (i.e. fleet maintenance). Other MS4 facilities, such as materials storage yards, salt storage facilities, parks, etc., should be visited if there is adequate time. The intent of this inspection is to verify that activities are performed as described in the MS4 Program Plan. The facility should be inspected as if it were a typical industrial facility. The DEQ inspector should look for the following:

- Are chemicals, bulk materials, or other potential sources of pollutants stored outside? Is there secondary containment? Are the materials covered?
- Does the facility have a fueling station? Is it under roof? Does it have spill containment materials?
- Where are the permittee's vehicles washed? Are wash racks and dewatering areas plumbed to sanitary sewers, if allowed? If not allowed, are wastewaters from wash racks and dewatering areas prevented from entering the MS4?
- Where are vehicles maintained? If outside, what BMPs are used to prevent polluted runoff? If inside, are floor drains plumbed to sanitary sewers?
- Does the site have structural stormwater management facilities (e.g., stormwater detention ponds, stormwater filter devices) installed? How are they inspected and maintained?
- Are inoperable vehicles stored and maintained in a way to prevent polluted runoff and leaching of contaminants to groundwater?
- Are storm drain inlets at the yard free of debris and regularly cleaned?
- Is the yard swept regularly? Are there oil stains and spills at the yard?

An additional in-field inspection activity may include accompanying MS4 staff as they perform routine maintenance such as cleaning out catch basins or repairing roads. The DEQ inspector should observe if MS4 staff utilize stormwater BMPs while performing those tasks.

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Does the permittee have existing BMPs in the MS4 Program Plan that address MS4 Maintenance/pollution prevention activities?
- Does the MS4 Program Plan have clearly defined measurable goals associated with each BMP developed for MS4 Maintenance/pollution prevention activities?
- Has the operator updated the MS4 Program Plan in accordance with any schedule outlined in the MS4 permit?
- Has the permittee developed and implemented written procedures designed to minimize or prevent stormwater pollutant discharge from daily operations such as road, street, and parking lot maintenance?
- Has the permittee developed and implemented written procedures designed to minimize or prevent stormwater pollutant discharge from equipment maintenance?
- Has the permittee developed and implemented written procedures designed to minimize or prevent stormwater pollutant discharge from the application, storage, transport, and disposal of pesticides, herbicides, and fertilizers?
- Do the written procedures address the proper disposal of waste materials, including landscape waste?
- Do the written procedures prevent the discharge of municipal vehicle wash water into the MS4 without authorization under a separate VPDES permit?
- Do the written procedures address and prevent the discharge of wastewater into the MS4 without authorization under a separate VPDES permit?
- Do the written procedures require the use of best management practices when discharging water pumped from utility construction and maintenance activities?
- Do the written procedures describe how pollutants in stormwater runoff from bulk storage areas (e.g., salt storage, topsoil and sand stockpiles) are minimized through the use of best management practices?
- Do the written procedures describe how pollutant discharge from leaking municipal vehicles and equipment will be prevented from entering the MS4?
- Do the written procedures ensure that application of material, including fertilizers and pesticides, is done in accordance with the manufacturer's recommendations?
- Has the permittee identified all high-priority municipal facilities (e.g., public works yards, recycling facilities, materials storage yards, vehicle storage/maintenance yards, salt storage facilities, etc.) within its jurisdiction?
- Has the permittee evaluated and identified which of its high-priority municipal facilities are not covered by a separate VPDES permit, but have a high potential of discharging pollutants?
- Has the permittee developed and implemented site specific SWPPPs for those high-priority municipal facilities that have a high potential of discharging pollutants?
- Does each SWPPP developed by the permittee contain a site description that includes a map identifying all outfalls, direction of flows, existing source controls, and receiving water bodies?
- Does each SWPPP developed by the permittee include a discussion and list of potential pollutants and pollutant sources?
- Does each SWPPP developed by the permittee include a discussion of all potential nonstormwater discharges?
- Does each SWPPP contain written procedures designed to reduce and prevent pollutant discharge?
- Does each SWPPP contain a description of permit required employee training?
- Does each SWPPP developed by the permittee contain procedures on conducting an annual site compliance evaluation?

- Does each SWPPP developed by the permittee contain an inspection and maintenance schedule for site specific source controls?
- Does the permittee log dates of inspections, findings, and follow ups on the SWPPPs?
- Does the permittee maintain a copy of the SWPPP at each facility?
- Does the permittee update the SWPPP as necessary to describe any discharge, release, or spill?
- Does the permittee utilize SWPPPs as part of its staff training?
- Has the permittee identified (by latitude and longitude) all applicable lands where nutrients are applied to a contiguous area greater than one acre?
- Has the permittee developed and implemented turf and landscape nutrient management plans for identified areas greater than one acre in accordance with §10.1-104.2 of the Code of Virginia?
- Does the permittee ensure that all applicable nutrient management plans are developed by a certified turf and landscape nutrient management planner in accordance with §10.1-104.2 of the Code of Virginia?
- Does the permittee track the total acreage of lands where turf and landscape nutrient management plans are required?
- Does the permittee track the total acreage of lands where turf and landscape nutrient management plans have been implemented?
- Does the permittee ensure that deicing agents applied to parking lots, roads, and sidewalks not contain urea or other forms of nitrogen or phosphorus?
- Has the permittee developed an annual written training plan and schedule for applicable employees?
- Does the permittee ensure that training (usually biennial) is provided to applicable field personnel in the recognition and reporting of illicit discharges?
- Does the permittee ensure that (biennial) training is provided to applicable employees in pollution prevention practices to use during road and parking lot maintenance?
- Does the permittee ensure that (biennial) training is provided to applicable employees in good housekeeping and pollution prevention to use around maintenance and public works facilities?
- Does the permittee ensure that employees and contractors who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act (§3.2-3900 et seq. of the Code of Virginia)?
- Does the permittee ensure that (biennial) training is provided to applicable employees in good housekeeping and pollution prevention practices to use at recreational facilities?
- Does the permittee ensure that the appropriate emergency response employees receive training in spill response?
- Does the permittee keep documentation of each training event including the training date, the number of employees attending the training, and the training objective, for three years?
- Does the permittee require that contractors use appropriate control measures and procedures for stormwater discharges to the MS4?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

The following are some typical problem areas associated with MS4 maintenance/pollution prevention programs. These areas should be closely considered during inspections:

- The permittee's MS4 maintenance staff lack training on and awareness of stormwater management BMPs.
- Permittee staff lack adequate guidance (e.g., MS4 maintenance BMP manual, SOPs, fact sheets) on proper stormwater management BMPs.
- Stormwater BMPs and procedures are not incorporated during routine MS4 maintenance activities.

- Maintenance yards lack SWPPPs and adequate controls to prevent stormwater contamination.
- Contractual staff performing operation and maintenance activities for the permittee are not required to consider stormwater quality and implement appropriate BMPs.

7. INDUSTRIAL/COMMERCIAL FACILITIES

This program area is applicable to Phase I MS4 permittees only. Phase II MS4 permittees may address stormwater discharges from privately owned industrial facilities and commercial businesses as part of their public education and outreach program.

General Permits

To minimize the impact of stormwater discharges from industrial facilities, the VPDES program includes an industrial stormwater permitting component. Operators of industrial facilities included in one of the 11 categories of stormwater discharges associated with industrial activity that discharge or have the potential to discharge stormwater to an MS4 or directly to waters of the United States require authorization under a VPDES industrial stormwater permit. Construction activity is one of these 11 categories, but because of the nature of construction stormwater controls, the category is addressed separately from the other 10 categories in Virginia.

TYPICAL ACTIVITIES PERFORMED BY THE MS4/PROGRAM ELEMENTS TO ADDRESS DURING THE INSPECTION

The industrial and commercial facilities program component can be implemented by various departments and staff. Some municipal permittees use existing pretreatment and health inspectors to fulfill the stormwater requirements. Some permittees choose to hire outside consultants to perform inspections and maintain the inventory of facilities.

Legal Authority

Some municipal permittees have adopted stormwater ordinances that outline general or specific discharge prohibitions that apply to industrial and commercial properties. These ordinances may include discharge exemptions, inspection requirements, and penalties for non-compliance. Some permittees, however, may rely on multiple existing codes (i.e., health, building, hazardous materials) designed to protect health and human safety. In these cases, MS4 staff should be able to articulate the combination of codes that provide the authority, if required by permit, to inspect, prohibit, or stop illicit discharges, and require control measures with respect to industrial facilities that the permittee determines contribute significant pollutant loadings to the MS4.

Facility Inventory

The types of industrial and commercial facilities that a permittee needs to inventory can vary from permittee to permittee. Some localities may have large industrial areas with few commercial businesses, while others may have a large number of restaurants and retail businesses but little or no industrial facilities. Still other permittees may have a mix of many different types of industrial and commercial facilities. Permittees should characterize the facilities and prioritize them based on their potential impact on stormwater quality, and the inspection program should be based on this prioritization approach.

Some permittees have developed a database to inventory industrial/commercial facilities and manage the inspection program. The inventory can be created using multiple resources, such as the permitting authority's list of facilities that are covered under the Virginia Industrial Stormwater General Permit, business licenses, list of pretreatment significant industrial users, and phone books or other professional directories. The database inventory may include facility type, prior inspections or enforcement actions (if applicable), proximity to receiving waters, potential pollutant sources on-site, and other pertinent

information to assist in inspection prioritization, if applicable, and management. If a permittee is not required to inspect industrial facilities pursuant to the MS4 permit, the permittee may not have detailed information regarding the on-site operations of the facility.

Standards, BMPs, and Outreach

Some municipal permittees have stormwater ordinances that include specific BMPs or standards for industrial and commercial facilities to protect water quality and minimize stormwater pollution. Others may have adopted pollution prevention standards for new or redeveloped industrial/commercial facilities that are required through conditions of approval, permits, etc. Some Phase I MS4 permittees have developed brochures, fact sheets, and posters to hand out to operators during inspections to educate them about appropriate BMPs. Some permittees have developed these materials in multiple languages to use in a variety of communities. Some permittees have Web sites with links to relevant outside resources for more information.

Staff Training

To ensure that inspectors are knowledgeable and proficient in the newest and most effective approaches to minimizing stormwater pollution from industrial/commercial facilities, some permittees have annual BMP training for inspection staff. This training may be presented in-house or staff may attend trainings provided by the permitting authority or industry. It is beneficial to cross-train other program staff (e.g., pretreatment, health department) used for stormwater inspections as well.

Inspections

An effective industrial/commercial inspection program should maintain a complete facility inventory and group them according to priorities established by the permittee. Inspection frequency for inspecting outfalls or connections between the industrial facility and the MS4 will be determined based on priority, and possibly a database or tracking system used to manage information such as inspection findings, enforcement actions, and required follow-up activities. Some permittees use and cross-train existing staff to perform inspections, but some permittees may use an exclusive stormwater inspector due to a large number of high-priority facilities/outfalls and connections. Ideally, the MS4 may have developed a written SOP for inspections with associated checklists.

Some MS4s may also conduct facility inspections (versus outfall/connection inspections) on a voluntary basis if there is evidence of significant pollutant loadings to the MS4. Inspectors who perform these inspections should also be generally aware of applicable regulations. In addition, these inspectors should be familiar with various stormwater management measures that can be used on industrial sites of the type inspected.

EXAMPLES OF DOCUMENTATION/RECORDS TO REVIEW FOR THE INSPECTION

The following records might help in evaluating the compliance and performance of the permittee’s industrial/commercial facilities program area.

Documentation	What to Look For
Local ordinances, regulations, or policies that might apply to industrial/commercial facilities	Stormwater ordinance Health codes Municipal code sections dealing with aesthetics; vehicles; dumpsters, trash, solid waste; and litter, trash, sweeping Building codes
Progressive enforcement	Flow chart or procedure that specifies a process by which fines

procedure or response plan (if required by permit)	can be levied and legal action taken against facility operators or business owners who violate stormwater rules and ordinances
Tracking system (if required by)	Database or other system used to track the following information: The number and type of industrial facilities in the permit area Prioritization scheme or other method that determines inspection schedule and frequency The number, frequency, and results, along with follow-up actions resulting from inspections The number and type of enforcement actions at facilities (if required by permit)
Examples of inspection reports (if required by permit)	Hand-written field notes and formal write-ups if both are used
Examples of enforcement files or cases (if required by permit)	Records should document enforcement and follow-up activities. Review both a completed file and one that is in progress if possible.
Training	Review any records documenting training provided to MS4 industrial inspectors, how often and to whom training was given, and examples of training materials used Educational information, brochures, or other BMP guidance used by staff or distributed to facility operators

ONSITE AND IN-FIELD PROCEDURES FOR MS4 INSPECTIONS

The evaluation of an industrial/commercial program focuses on prioritization of facilities, and in-field inspection procedures whether for outfalls and connections or facilities. For the onsite portion of the inspection, the inspector should review the permittee's ordinances, guidance, and other relevant written materials.

For the in-field evaluation activities, the inspector will need to determine whether the permittee is adequately inspecting industrial/commercial facilities, if facility inspections are required. The best manner to accomplish this is for the DEQ inspector to observe an actual inspection in progress.

The inspector should allot up to 2 or 3 hours for the in-field portion of this program area, to allow enough time for travel between facilities. If the permittee is conducting both commercial and industrial inspections, try to observe inspections at each type of facility. In general, small, less complex facilities are better to visit than large industrial facilities. The DEQ inspector should coordinate with the permittee to select typical facilities. For example, if the vast majority of facilities are vehicle maintenance facilities, the inspector should visit several of those. DEQ inspectors should make clear that they will only observe the MS4 inspectors as they conduct their inspections.

It is a good idea for the DEQ inspector to try to limit the number of people that attend each inspection. Too many staff can overwhelm a small facility, making it harder for the inspector to conduct a representative inspection. The DEQ inspector should discuss in advance which facilities will be visited. This will allow enough time to schedule MS4 inspection staff and arrange transportation logistics.

The primary purpose for the MS4 to conduct inspections of these facilities is to determine whether illicit discharges are occurring or if the facility has the potential to contribute significant pollutant loadings to the MS4. Visiting a site during a rain event is optimal to observe potential issues. For traditional MS4s,

the MS4 inspector should be aware of all applicable ordinances, as well as administrative, civil, and criminal recourse in the event of non-compliance. The MS4 inspector should be aware of the enforcement escalation procedure or plan as well.

As the MS4 inspector conducts the industrial or commercial inspection, the DEQ inspector should look for the following:

- Is the inspector knowledgeable about stormwater BMPs, requirements, and ordinances?
- Is the inspector generally familiar with the applicable industrial stormwater general permit?
- When inspecting an industrial facility, does the inspector review the facility's SWPPP?
- Does the inspector use a checklist or otherwise document inspection findings in the field?
- What kind of written feedback is provided to the operator and within what timeframe do concerns need to be addressed?
- What kind of report is generated as a result of the inspection? Does it detail all problems found at the facility or does it document only that the inspection occurred?
- Are findings from inspections tracked in a central location or database?
- How does the inspector track follow-up inspections or enforcement actions?
- Is the inspector thorough? Does the inspector walk the entire site and identify all potential pollutant sources?
- Does the inspector note flow pathways and check for discharges from the facility at outfalls or to storm drain inlets?

POTENTIAL INSPECTION/AUDIT QUESTIONS

- Has the permittee developed a program to identify and control pollutants in stormwater discharges to the MS4 from industrial and "high risk" (e.g., municipal landfills; treatment, storage, or disposal facilities for municipal waste; hazardous waste treatment, storage, disposal facilities; EPCRA Title III facilities) facilities?
- Does the permittee maintain, and update as necessary, an inventory of all known industrial and "high risk" dischargers to the MS4?
- Does the inventory include all facilities with VPDES industrial stormwater permits?
- Has the MS4 Program Plan been updated in accordance with any schedule outlined in the applicable MS4 permit?
- Has the permittee developed and implemented a prioritized schedule and procedures to inspect outfalls of facilities with VPDES industrial stormwater permits?
- Does the permittee inspect all industrial outfalls connected to its MS4 a minimum of once every five years?
- Does the permittee review all discharge monitoring reports (DMRs) from facilities with VPDES industrial stormwater permits as part of its investigations of significant pollutant loadings?
- For those facilities that do not have coverage under VPDES industrial stormwater permits, and for which the permittee has evidence of substantial pollutant loading to its MS4, does the permittee coordinate with DEQ and ensure that those facilities are inspected?
- For facilities and operations that have non-stormwater discharges but do not have VPDES permit coverage; does the permittee refer those facilities to DEQ for compliance review under the Virginia State Water Control Law?
- For facilities and operations identified pursuant to 40 CFR Part 122.26(b)(14) with manufacturing, processing, or outside raw materials storage that do not have coverage under an existing VPDES industrial stormwater permit; does the permittee refer those facilities to DEQ for compliance review under the Virginia State Water Control Law?

- For all VPDES industrial stormwater permit facilities where evidence exists of significant pollutant loading to the MS4 (e.g., as determined by exceedences of effluent limitations reported pursuant to VPDES permit required monitoring); does the permittee refer those facilities to DEQ for compliance review under the Virginia State Water Control Law?
- For facilities that do not submit signed copies of DMRs to the permittee as required under a VPDES industrial stormwater permit; does the permittee refer those facilities to DEQ for compliance review under the Virginia State Water Control Law?
- Does the permittee maintain a list of industrial and/or commercial dischargers that are not regulated under the Virginia State Water Control Law, but have been determined to contribute significant pollutant loading to the MS4? Is a report written after the inspection if an inspection was conducted?
- Does the permittee include outfalls from those facilities (described above) in the prioritized inspection schedule?
- Does the list (described above) include major automotive facilities such as repair shops, body shops, auto detailers, tire repair shops and service stations?
- Does the permittee require control measures as necessary and/or appropriate for stormwater discharges from those dischargers?
- Does the permittee have the authority to conduct inspections and enforce requirements?
- Does the permittee periodically check to see if new facilities that must be covered by an industrial stormwater general permit have obtained permit coverage?
- Has the permittee mapped the locations of prioritized facilities to cross-reference reports of dumping, illicit discharges, or other water quality issues?
- Does the permittee refer facility operators to specific stormwater BMP or standards guidance documents?
- Has the permittee developed educational materials (e.g., brochures, handouts, BMP guidance) to distribute to industrial and commercial facility operators?
- Do industrial and commercial MS4 inspectors receive training on how to conduct inspections?
- Does the permittee assign different inspectors to inspect different types of facilities (e.g., health inspectors for restaurants, pretreatment inspectors for industrial facilities with a pretreatment permit)?
- Does the permittee's industrial/commercial inspector(s) use a standard checklist during inspections?
- Is a report written after the inspection?
- For industrial facilities, does the inspector review the SWPPP and monitoring data during the inspection?
- Does the inspection staff use a formalized, approved progressive enforcement procedure in instances of non-compliance?
- Has the permittee identified specific business sectors that might be a significant source of stormwater pollutants to the MS4?

COMMON PROBLEMS/ISSUES IDENTIFIED DURING INSPECTIONS

The following are some typical problem areas associated with the industrial/commercial MS4 program area. These areas should be closely considered during inspections:

- The permittee has yet to fully implement an inspection program for industrial and/or commercial facilities (this is only a problem if there is a permit requirement mandating facility inspections by the permittee).
- The inventory of industrial/commercial facilities is not complete and is not regularly updated.
- Outfalls have not been prioritized according to water quality threat.

- Industrial/commercial inspectors have not been trained on stormwater BMPs and requirements if facility inspections are occurring.
- The permittee lacks written procedures and standards for conducting industrial/commercial inspections if facility inspections are occurring.
- The permittee cross-trains existing inspectors (e.g., pretreatment, food safety) to perform stormwater inspections but does not provide adequate time and resources to perform them.

PART V - POST-INSPECTION ACTIVITIES

1. Preparing the MS4 Inspection Report

After the inspection, it is important that a written description of findings is provided to the permittee. Using only an oral outbrief is not a sufficient way to convey recommendations or requirements for program improvement. In general, all correspondence regarding VPDES permits should be in writing. Also, inspectors should be mindful that a MS4 inspection/audit is typically taken very seriously by MS4 staff and management, and that the final report may be distributed to upper management or to the governing body of the MS4 (i.e., city council). Finally, the permittee has likely invested numerous staff hours preparing for the inspection and providing inspectors with information during the on-site inspection itself. It is therefore incumbent upon DEQ inspectors to take the necessary time to develop a concise, thorough, and fair written assessment of the inspection findings.

As soon as possible after the inspection, it is recommended that inspectors review all notes and supporting information obtained prior to and during the on-site inspection and document the findings and conclusions. As a general guideline, the final report should be provided to the permittee within 3 to 4 weeks after the inspection. Less time may be needed to prepare a report for smaller, nontraditional MS4s, and for inspections where only one or several program areas are evaluated. Conclusions drawn should be defensible and based on permit requirements and conditions, or the MS4 Program Plan and associated measurable goals. It is very important that conclusions drawn are consistently applied to all permittees evaluated.

As stated previously, the primary goal of an inspection is to determine the compliance status of the permittee with the permit and the MS4 Program Plan that was developed to meet conditions of that permit. In addition to providing recommendations for program improvement or required corrective actions to achieve compliance, inspectors should also provide positive feedback as well. In general, inspection findings can be divided into the following three categories:

- **Corrective Actions**-Are instances where the inspector observed that the permittee does not appear to be compliant with a specific permit requirement or MS4 Program Plan commitments.
- **Recommendations**-Recommendations are made in instances where program weaknesses/areas of concern are noted that may impede effective program implementation. Program weaknesses can also be areas where future permit violations could result if the permittee does not make adjustments to its program. While conducting inspections, inspectors may also find that permittees are implementing stormwater related activities that are not documented in the MS4 Program Plan, but are applicable toward one or more program areas of the permit. An example would be a town conducting weekly street sweeping, but not describing that activity in its MS4 Program Plan or annual reports. Although that example would not be considered to be a program weakness, the inspector would make a recommendation that the MS4 Program Plan be updated to include that activity as a programmatic BMP.
- **Positive or commendable program elements**- Positive program elements indicate activities that are "above and beyond" the requirements of the permit and MS4 Program Plan. Inspectors should make note of, and include in inspection reports, any innovative approaches and techniques

utilized by permittees. Not only does this encourage the permittee to continue implementing the practice, but allows other permittees to learn about the approach through shared information.

Suggested Format for Inspection Reports-The report should contain an Introduction/Background section that contains basic information on the MS4 and the MS4 inspection. Examples of information to include in this section are: size and population served, number of outfalls, receiving waters, names and titles of permittee staff involved in the inspection, approved TMDLs, etc.

The Introduction/Background section of the report should be followed by separate sections describing each of the MS4 Program Areas that were evaluated. These sections should contain a basic overview of what programmatic elements the permittee is implementing for each program area, as well as the inspector's observations. The inspector may include any positive or commendable program elements in these sections. The inspection report should conclude with two final sections under the headings of "**Recommendations**" and "**Corrective Actions**", respectively.

2. Preparing the Inspection Report Cover Letter

After an MS4 Inspection Report is developed, DEQ will distribute that report to the permittee along with a cover letter. The cover letter should request a written response within a specific time period (e.g., 30 to 90 days) to address any corrective actions and/or program weaknesses cited in the report. Normally, permittees are given an opportunity to refute findings noted in the report. A meeting can also be scheduled with the permittee to discuss proposed modifications in the MS4 Program Plan resulting from corrective actions and/or deficiencies described in the report.

3. Follow-Up Activities

An MS4 inspection can result in several different follow-up activities, from re-inspections to permit reissuance to referral of the permittee for enforcement action. Several of these activities are described below.

Technical Assistance

Most MS4 inspections will find areas of alleged non-compliance and/or program weaknesses that require the permittee to make corrective actions in order to achieve compliance. DEQ inspectors can help ensure compliance by providing recommendations and/or technical assistance to the permittee on issues related to these deficiencies. DEQ may decide to provide additional technical assistance or training to address specific program weaknesses identified during the inspection.

Follow-Up MS4 Inspections

Follow-up MS4 inspections may be conducted where major deficiencies have been identified and the permittee needs additional time to correct them. The permittee may be given time to correct those deficiencies, but follow-up inspections may be appropriate for deficiencies that cannot be documented via annual reports or written correspondence.

Targeted Evaluations

If an MS4 inspection identifies a program area that appears to have a problem(s) in common amongst several permittees, then DEQ may decide to conduct targeted inspections of that program area at several additional MS4 permittees. For example, if stormwater compliance problems are identified at most of the public works yards visited, then DEQ might want to target additional inspections for those yards.

Permit Issuance or Renewal

A thorough review of submitted annual reports along with an on-site inspection/audit may be helpful during the permit reissuance process. Specific permit requirements could be drafted to address any deficiencies identified during the inspection/audit.

Referral of MS4 for Enforcement Action

Referring an MS4 permittee for enforcement on findings identified during an inspection will obviously depend on a variety of factors including the severity of the alleged non-compliance, if significant pollutant discharge to receiving water occurs, if the permittee has a history of non-compliance, and other factors. To make a case for an enforcement action, it is important to collect information that documents non-compliance, including copies of records, photographs, or other documentation. An enforcement action is the last course of action to achieve compliance, but even the possible threat of enforcement will usually help to bring about compliance.

The table below provides MS4 inspectors guidance on appropriate responses that are available to bring permittees back into compliance.

Non-Compliance	Circumstance	DEQ Response
Failure to obtain or transfer coverage under the MS4 General Permit	Upon discovery by DEQ	Warning Letter (WL)
	More than 90 days following discovery by DEQ	Notice of Violation (NOV)
Failure to submit Annual Report	30 days overdue	WL
	More than 90 days overdue	NOV
Failure to comply with major milestones in the MS4 permit or Consent Special Order (CSO)	Upon discovery by DEQ	Establish deadline to comply with milestone(s)
	30 days overdue	WL
	More than 60 days overdue	NOV
Significant unauthorized discharge resulting from negligent or willful action by permittee	Upon discovery by DEQ	NOV and possible criminal prosecution or civil enforcement case
Failure to meet significant permit requirements. Examples include, but are not limited to: <ul style="list-style-type: none"> • Substantially inadequate MS4 Program Plan as determined by review of the Annual Report, • Substantial failure to develop the MS4 program as determined by MS4 audit/inspection, • Substantial failure to implement MS4 permit requirements 	Unsatisfactory annual report or audit/inspection	Deficiency letter with schedule to address corrective actions
	Failure to address corrective actions in accordance with the schedule	WL
	Failure to address corrective actions in accordance with the deadline established by WL	NOV
Failure to meet major milestones	30 days overdue	WL

or reporting requirements set forth in an administrative or judicial order	More than 60 days overdue	NOV
Failure to comply with incident reporting requirements contained in the MS4 permit	All	WL or NOV (depending on severity of the incident)
Reporting false information	All	NOV